







BIBLIOGRAPHY OF  
SOIL SCIENCE



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BIBLIOGRAPHY *of*  
SOIL SCIENCE, FERTILIZERS  
*and* GENERAL AGRONOMY  
1934 - 1937



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## PREFACE

The arrangement of the Bibliography follows the same general lines as its predecessor, and a detailed explanation of the classification and mode of use will therefore not be given here.\* The Bibliography is compiled from the references included in the monthly lists Nos. 42-77 of "Publications relating to Soils and Fertilizers", and covers the period 1934-1937. A few references dated between 1931 and 1933, which were omitted from the first volume, are also included.

Several alterations have been made in the classification numbers assigned to certain subjects, in order to conform to recent changes and extensions in the International Decimal Classification. Such changes are inevitable in a still evolving universal classification. The index in this Bibliography is, moreover, arranged by "specific entry", e.g. "Quantitative analysis" instead of "Analysis, quantitative". The main result of these changes is that the subject indexes of the two Bibliographies are not completely interchangeable. A list of changed numbers, and numbers that were not used at all in the 1931-1934 Bibliography, follows.

Numerous entries in this Bibliography have a "language indication" appended. A capital letter in square brackets following the reference denotes the language in which the paper is written; a small letter denotes that there is a summary in another language—e.g. [G.e.] = German with English summary. English [E] is only indicated for papers published in journals usually written in other languages. This method of indicating language has only been introduced at the Bureau since 1936 and the indication is consequently missing from earlier references. Where the Bureau staff has seen only an abstract reference and not the original paper, no language indication is given. It

\* "Bibliography of Soil Science, etc. 1931-1934." Price 25 -. A reprint of the "Explanatory Preface", including a full index to the classification numbers employed, is obtainable from the Bureau on request.

## PREFACE

has not been considered necessary to give a list of the letters (which are mainly self-explanatory) used to indicate language.

In order to save space in the main Subject Index, papers dealing with plant nutrition, fertilizing, etc., with reference to specific crops have sometimes been cross-indexed under a general heading "Crops", in the same way as references in the geographical section (G), as follows :

Basic slag	631.853
.....	
<i>Crops</i> :	633.63- 635-
instead of separately, e.g. :	
for sugar beet	633.63-
for vegetables	635-

The list of abbreviations of journals and periodicals (p. 411) is complementary to the list given in the 1931-1934 Bibliography.

# INDEX TO NEW CLASSIFICATION NUMBERS

not used in the 1931-1934 Bibliography

(Where a number has been changed, the one previously used is given in parentheses, after the subject.)

	<b>Miscellaneous</b>	631.347.2	Porous hose irrigation (626.83)
312	Population		
525.5	Seasonal variations	631.347.21	Canal irrigation
536.63	Specific heat	631.347.22	Subterranean irrigation (621.643.2)
54	<b>Chemistry</b>		
541.182.025	Thixotropy	631.347.24	Sprinkling irrigation (621.647.24)
546.14	Bromine		
546.212	Heavy water	631.4	<b>Soils</b>
546.73	Cobalt	631.416.319	Arsenic in soil
546.74	Nickel	631.416.323	Selenium in soil
547.456	Pentoses	631.416.327	Boron in soil
547.457.1	Glucose	631.416.328.4	
547.581.2	Benzoic acid		Silica in soil
547.995.1	Chitin	631.416.821.1	
55	<b>Geology</b>		Aluminium in soil
550.35	Earth rays	631.416.846	Magnesium in soil
551.41	Relief	631.416.847	Zinc in soil
551.58	Climate climatol- ogy (551.562)	631.416.856	Copper in soil
551.763	Greensand	631.416.871.1	
552.323	Volcanic rocks		Manganese in soil
552.323.5	Basalt	631.416.872	Iron in soil
553.492.1	Bauxite	631.416.882.1	
553.983	Bitumen		Titanium in soil
57.8	<b>Biology, Botany</b>	631.416.888.1	
577.16	Vitamins (612.392.01)		Vanadium in soil
577.8	Sex	631.417.4	Carbon-nitrogen ratio (631.417.3)
581.186.3	Epinastic response	631.417.745.881	
61	<b>Pathology</b>		Cellulose in soil
612.753	Bone formation	631.417.749.18	
616.936	Malaria		Cyanuric acid in soil
616.999.99	Tuberculosis	631.423.6	Determination of CO <sub>2</sub> in soil
62	<b>Engineering</b>		Nitrification (631.461.2/3)
627.51	Flood control	631.461.3	
631.3	<b>Agricultural equipment</b>	631.461.74	Miscellaneous bacteria
631.3 : 531.781	Dynamometer	631.467	Micro-fauna



# INDEX TO NEW CLASSIFICATION NUMBERS

<b>631.5.6</b>	<b>Cultivation, Re-</b>	<b>633.347</b>	<b>Kale</b>
	<b>clamation</b>	<b>633.364</b>	<b>Lespedeza</b>
<b>631.548</b>	<b>Hydroponics</b>	<b>633.372</b>	<b>Broom</b>
<b>631.613</b>	<b>Terracing (624.13)</b>	<b>633.375</b>	<b>Black locust</b>
<b>631.617</b>	<b>Reclamation of</b>	<b>633.377</b>	<b>Derris</b>
	<b>deserts</b>	<b>633.378</b>	<b>Cicer</b>
<b>631.62 : 631.432.3</b>	<b>Drain spacing</b>	<b>633.393</b>	<b>Cactus</b>
	<b>(626.362.3)</b>	<b>633.425</b>	<b>Kohl-rabi</b>
<b>631.8</b>	<b>Fertilizers</b>	<b>633.524.33</b>	<b>Urena lobata</b>
<b>631.811.5</b>	<b>Sodium in plant</b>	<b>633.527.3</b>	<b>Cyperus malaceniis</b>
	<b>nutrition</b>	<b>633.682</b>	<b>Cassava</b>
<b>631.811.93</b>	<b>Silica in plant nu-</b>	<b>633.75</b>	<b>Poppy</b>
	<b>trition</b>	<b>633.812.426</b>	<b>Lemon grass</b>
<b>631.835</b>	<b>Sylvinite</b>	<b>633.812.764</b>	<b>Thyme</b>
<b>631.839</b>	<b>Nepheline</b>	<b>633.822</b>	<b>Peppermint</b>
<b>631.859.42</b>	<b>Magnesium phos-</b>	<b>633.855.335</b>	<b>Betel nut</b>
	<b>phate (631.859)</b>	<b>633.881.15</b>	<b>Digitalis</b>
<b>631.879.2</b>	<b>Sewage (631.849)</b>	<b>633.881.33</b>	<b>Hydrastis</b>
<b>631.893</b>	<b>Compound fertili-</b>	<b>633.883.252</b>	<b>Aloe</b>
	<b>zers (631.89)</b>	<b>633.883.259.43</b>	
<b>631.893.12</b>	<b>"Amorphos", "Ni-</b>	<b>633.885.1</b>	<b>Cassia</b>
	<b>trophos"</b>	<b>634</b>	<b>Arboriculture</b>
<b>631.893.123</b>	<b>"Nitrophoska"</b>	<b>634.14</b>	<b>Quince</b>
<b>631.893.13</b>	<b>"Potazote"</b>	<b>634.23</b>	<b>Cherry</b>
<b>631.893.14</b>	<b>Nitrochalk</b>	<b>634.26</b>	<b>Nectarine</b>
<b>632</b>	<b>Plant protection</b>	<b>634.371</b>	<b>Litchi</b>
<b>632.187</b>	<b>Fire damage</b>	<b>634.38</b>	<b>Mulberry</b>
<b>632.536</b>	<b>Bracken</b>	<b>634.431</b>	<b>Lanzon</b>
<b>632.556.7</b>	<b>Water hyacinth</b>	<b>634.471</b>	<b>Mangosteen</b>
<b>632.557.1</b>	<b>Rushes</b>	<b>634.48</b>	<b>Cucumber tree</b>
<b>632.575.7</b>	<b>Mercurialis, Spurge</b>	<b>634.54</b>	<b>Hazel</b>
<b>632.587.56</b>	<b>Dichapetalum</b>	<b>634.573</b>	<b>Cashew nut</b>
<b>632.588.6</b>	<b>Epilobium</b>	<b>634.63</b>	<b>Olive</b>
<b>632.591.6</b>	<b>Witchweed</b>	<b>634.662</b>	<b>Jujube</b>
<b>632.594.2</b>	<b>Bindweed</b>	<b>634.725</b>	<b>Gooseberry</b>
<b>632.597</b>	<b>Bramble</b>		<b>(634.72)</b>
<b>632.599.8</b>	<b>Compositae</b>	<b>634.776</b>	<b>Chinese gooseberry</b>
<b>632.651.6</b>	<b>Earthworms</b>	<b>634.953.6</b>	<b>Windbreaks</b>
	<b>(595.16)</b>		<b>(631.543.82)</b>
<b>632.732</b>	<b>Termites</b>	<b>634.956.23</b>	<b>Deforestation</b>
<b>632.765</b>	<b>Wireworms (632.7)</b>	<b>634.972.2</b>	<b>Maple</b>
<b>632.8</b>	<b>Virus diseases</b>	<b>634.972.3</b>	<b>Poplar</b>
<b>633</b>	<b>Cultivated crops</b>	<b>634.972.4</b>	<b>Chestnut</b>
<b>633.177</b>	<b>Kafir corn</b>	<b>634.972.6</b>	<b>Birch</b>
<b>633.24</b>	<b>Timothy</b>	<b>634.973.37</b>	<b>Leucaena glauca</b>
<b>633.261</b>	<b>Bermuda grass</b>	<b>634.973.931</b>	<b>Ash</b>
<b>633.266</b>	<b>Paspalum</b>	<b>635</b>	<b>Horticulture</b>
<b>633.282</b>	<b>Andropogon, The-</b>	<b>635.24</b>	<b>Jerusalem artichoke</b>
	<b>meda</b>	<b>635.32</b>	<b>Artichoke</b>
<b>633.287</b>	<b>Bouteloua</b>	<b>635.346</b>	<b>Seakale</b>
<b>633.289</b>	<b>Agropyron, Nardus,</b>	<b>635.61</b>	<b>Melon</b>
	<b>Berseem</b>	<b>635.646</b>	<b>Egg plant</b>
<b>633.33</b>	<b>Cowpea</b>	<b>635.7</b>	<b>Herbs</b>

# INDEX TO NEW CLASSIFICATION NUMBERS

635.935.74	Narcissus	(569)	Palestine [(569.4)]
635.935.79	Gladiolus	(593)	Siam
635.937.12	Hydrangea	(599)	Tonkin
635.939.1	Lavender	(611)	Tunis
635.939.124	Azalea	(612)	Tripoli
635.939.94	Orchid	(614)	Cyrenaica
635.939.98	Aster	(62)	Morocco
635.944	Tulip	(635)	Eritrea
	<b>Miscellaneous</b>	(65)	Algeria
637.127.3	Casain	(663)	S��n��gal
637.3	Cheese	(665.2)	French Guinea
637.4	Egg quality	(665.8)	Cape Verde Is-
662.74	Illuminating gas		lands
663.12	Yeast	(669.9)	Fernando Po
663.883.2	Jattopha	(676)	East Africa
664.15	Molasses	(676.1)	Uganda
778.35	Aerial photography	(676.2/9)	Kenya [(676)]
		(711)	British Columbia
	<b>Geographical</b>	(72)	Mexico
(410)	Great Britain	(86)	Columbia
(415)	Northern Ireland	(883)	Surinam
(439)	Hungary [(439.1)]	(911.14)	Sarawak
(469)	Portugal	(912)	Celebes
(474.2)	Estonia	(95)	New Guinea
(519)	Chosen	(961)	Fiji



# BIBLIOGRAPHY OF SOIL SCIENCE, FERTILIZERS AND GENERAL AGRONOMY

1934-1937

## I. MAIN BIBLIOGRAPHY.

### 55.6 GEOLOGY, PALAEONTOLOGY

**553.97** -Kivinen, E. The organic composition of peat types and several peat constituents. *Agrogeol. Julk. Finland*, No. 36, 1934, pp. 36. [G.]

**553.97 : 581.5** -Wilson, B. D.; Eames, A. J.; Staker, E. V. Genesis and composition of peat deposits. *Cornell Agric. Expt. Sta. Mem.* 188, 1936, pp. 13.

**553.97 : 627.51** -Dachnowski-Stokes, A. P. Peat land in the service of flood control and water conservation. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (319-321).

**553.97 : 631.437.2** -Wilson, B. D.; Staker, E. V. Complex ions in relation to the electro-dialysis of peat. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (426-428).

**553.97 : 631.437.2** -Wilson, B. D.; Staker, E. V. Ionic relationships in peat. *Soil Sci.* 43, 1937 (247-252).

**56.017.2** Houdek, P. K. Pollen analysis of some water deposited sediments. *Ecology* 16, 1935 (28-32).

**56.017.2** Gamma, H. The nature and significance of pollen analysis. *Schweiz. Ztschr. Forstw.* 87, No. 6, 1936 (180-186). C.M.R. 1936 (No. 599).

### 62 ENGINEERING

**627.51** Fuller, G. L.; Eakin, H. M. The arrest and prevention of devastation by floods. *SCS-MP-12*, 1936, pp. 11. E.S.R. 76 (400).

**627.51** Silcox, F. A.; Lowdermilk, W. C.; Cooke, M. L. The scientific aspects of flood control. *Amer. Assoc. Adv. Sci. Occ. Pub. Suppl. to Science* 84, 1936, pp. 47.

**627.51** -Strele, G. Torrent control and fixation of mountain soils in various countries. *Wien Allg. Forst-u. Jagdztg.* 55, Nos. 27, 28, 29, 1937 (119-120, 124-126, 129-130). C.M.R. 18 (12).

### 63 AGRICULTURE

**63 : 550.35** -Lommer, H. Earth radiation and agriculture. *Deut. Landw. Pr.* 62, 1935 (637-638); 63, 1936 (6-7, 18). *ForschDienst.* 1 (386). [G.]

**63 : 551.5** -Ramdas, L. A. Agricultural meteorology. *Curr. Sci.* 1, 1933 (191-192).

## BIBLIOGRAPHY OF SOIL SCIENCE

**63 : 551.5—Petonke, M.** The development and the problem of agro-meteorological research. *Forsch. u. Fortschr.* 10, 1934 (312). [Z.P.D. 38 (191).] [G.]

**63 : 551.5—Ramdas, L. A.** Micro-climatology. *Curr. Sci.* 2, 1934 (445-447). [E.S.R. 72 (297).]

**63 : 551.5—Ramdas, L. A. ; Kalamkar, R. J. ; Gadre, K. M.** Agricultural meteorology : studies in micro-climatology, Part II. *Indian J. Agric. Sci.* 5, 1935 (1-11).

**63 : 551.5—Hosking, J. S.** The ratio of precipitation to saturation deficiency of the atmosphere of India. *Curr. Sci.* 5, 1937 (422-423).

**63 : 551.5—Prescott, J. A. ; Davidson, J. ; Trumble, H. C.** Climatology in relation to biology and agriculture. *J. Aust. Inst. Agric. Sci.* 3, 1937 (77-79).

**63 : 551.5—Thorntwaite, C. W.** The significance of climatic studies in agricultural research. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (475-480).

### 631.3 AGRICULTURAL EQUIPMENT

**631.3—Pokrovsky, G. I.** The theory of the work of the plough. *Pedology* No. 5/6, 1935 (863-866).

**631.3—Nekrasov, P. A.** Agrophysical methods of judging cultivation implements and machines. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (234-246). [R.]

**631.3 : 531.781—Ballu, T.** Resistance of soil to the passage of cultivation implements. *J. Agric. Prat.* 64, 1935 (447-448). [F.]

**631.3 : 531.781—Giles, G. W.** A drawbar dynamometer and its use in soil tillage experiments. *Missouri Agric. Expt. Sta. Res. Bull.* 226, 1935, pp. 19.

**631.3 : 531.781—Clyde, A. W.** Measurement of forces on soil tillage tools. *Agric. Engng.* 17, 1936 (5-9).

**631.3 : 531.781—Hénin, S.** Some results obtained in soil investigations by means of the Demolon-Hénin dynamometer borer. *Soil Res.* 5, 1936 (1-20). [F.]

**631.3 : 631.434—Chizhevsky, M. G.** The influence of an increased working rate of ploughs on tilth and yield. *Pedology* No. 4, 1934 (472-491). [R.e.]

**631.3 : 631.434—Nekrasov, P. A.** Agro-physical methods of valuing cultivation instruments. *Trans. Int. Soc. Soil Sci. Soviet Sect. 1st Comm.* 1934 (44-56). [F.]

**631.3 : 631.445.7—Pilia, N. S. ; Terentiev, V. A.** Crop cultivation on ridges. *Soviet Subtrop.* No. 2, 1936 (86-97). [R.]

**631.3 : 631.613—Harper, H. J.** Studies on the use of the terracing plough for soil conservation. *J. Amer. Soc. Agron.* 28, 1936 (301-309).

**631.347.21—Baldwin, H. W.** Flume system of irrigation, "Long-line" ("Herring-bone"). *Hawaii Plant. Rec.* 39, 1935 (4-11).

**631.347.22—Budzko, I.** Automatic irrigation by the Kornev system. *Elektrif. Selsk. Khoz.* 1932 (3). *Pedology* 1935 (926).

**631.347.22—Bordas, J.** New experiments on subterranean irrigation. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (401-403). [F.]

**631.347.22—Mathieu, G.** Observations on subterranean irrigation. *C. R. Acad. Agric.* 23, 1937 (752-756). [F.]

## FERTILIZERS AND GENERAL AGRONOMY

- 631.347.24—Lavrentiev.** Sprinkling irrigation. *Elektrif. Selsh. Khoz.* 1932 (55–68). *Pedology* 1935 (927).
- 631.347.24—West, E. S.; Howard, A.** The design of overhead irrigation systems. *Aust. Coun. Sci. Indust. Res. Pamph.* 50, 1934, pp. 39.
- 631.347.24—Petrov, E.** Results of experiments with mechanical spray irrigation in the arid zones of the U.S.S.R. *Trans. Int. Soc. Soil Sci. Soviet Sect. A*, 1935 (198–201). •
- 631.347.24—Stefanelli, G.** Central circulatory irrigation. *Ist. Agrar. Pisa Boll.* 11, 1935 (104–126). [L.]
- 631.347.24—Kerr, H. W.** A new type of irrigation sprinkler. *Cane Grow. Quart. Bull.* 4, 1936 (79–80).
- 631.347.24—Kerr, H. W.** Spray irrigation. *Cane Grow. Quart. Bull.* 3, 1936 (145–149).
- 631.347.7—Robey, O. E.** Using porous hose in high crops. *Mich. Agric. Expt. Sta. Quart. Bull.* 17, 1935 (225–228). *Hort. Abs.* 5 (213).
- 631.37 : 631.434—Implement and Machinery Review.** Tractor and soil packing. *Impl. Mach. Rev.* Nov. 1934, p. 578. *Oxford Engng. Abs.* 14 (5).

## 631.4 SOILS

- 631.4—Demolon, A.** Reflections on the evolution of soil science. *Bull. Assoc. Franç. Ét. Sol* 1, 1935 (29–34). [F.]
- 631.4—Comber, N. M.** The constitution of the soil. *J. Bd. Greenh. Res.* 4, 1936 (179–184).
- 631.4—Comber, N. M.** Recent advances in science: pedology. *Sci. Prog.* 30, 1936 (680–683). C.A. 30 (3921).
- 631.4—Edelman, C. H.** The limits of soil science. *Landbouwk. Tijdschr.* 48, 1936 (625–628). [Du.]
- 631.4—Hendrick, J.** Soil science in the twentieth century. *Brit. Assoc. Rept.* 1936 (233–248).
- 631.4—Kuron, H.** Soils and soil science. *ForschDienst.* 1, 1936 (342–351). [G.]
- 631.4—Robinson, G. W.** Pedology (soil science) at the British Association. *Nature* 138, 1936 (729–730).
- 631.4—Robinson, G. W.** Soils. *Sands, Clays and Minerals* 3, No. 1, 1936 (35–38). C.A. 31 (1137).
- 631.4—Comber, N. M.** Recent advances in science: pedology. *Sci. Prog.* 32, 1937 (113–116). C.A. 31 (6787).
- 631.4—Ebklaw, W. E.** Soil science and geography. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (1–6).
- 631.4 : 535.21—Dhar, N. R.** Influence of light on some biochemical processes. *Soc. Biol. Chem. India* 1935, pp. 68.
- 631.4 : 535.21—Fazaluddin.** Nature of oxidising photo-catalysts in soil. *Indian J. Agric. Sci.* 5, 1935 (195–207).
- 631.4 : 535.21—Fazaluddin.** Photo-oxidation of sulphur. *Indian J. Agric. Sci.* 5, 1935 (208–212).
- 631.4 : 539.16—Urondo, F. E.** The radioactivity of the sub-soil. *Rev. Fac. Quim. Ind. Agric. Univ. Nacl. Litoral* 4, 1936 (112–125). C.A. 30 (7027).
- 631.4 : 541.134.5—Tommasi, G.; Marimpietri, L.** The oxidation-reduction potential of soils (rH). *Ann. Sper. Agrar. Roma* 13, 1934 (39–53). [L.]

# BIBLIOGRAPHY OF SOIL SCIENCE

**631.4 : 541.134.5—Kohnke, H. ; Bradfield, R.** Factors affecting the redox potential of soils. *Amer. Soil Surv. Bull.* 16, 1935 (85). *E.S.R.* 74 (755).

**631.4 : 541.134.5—Peech, M. ; Batjer, L. P.** A critical study of the methods for measuring oxidation-reduction potentials of soils, with special reference to orchard soils. *Cornell Agric. Expt. Sta. Bull.* 625, 1935, pp. 23.

**631.4 : 541.134.5—Smolik, L.** Contribution to the redox potential of soils. *Sborn. Čsl. Akad. Zeměd.* 10, 1935 (272-275). [Cz.e.]

**631.4 : 541.134.5—Tommasi, G. ; Marimpietri, L.** The oxidation-reduction potential (rH). *Ann. Sta. Chim. Agrar. Roma* 14, 1934, pp. 9. *Ann. Agron.* 5 (567). [I.]

**631.4 : 541.134.5—Wartenberg, H.** The catalytic effect of platinum and gold in soil suspensions and the oxidation-reduction potential of soil. *Ztschr. Pflanz. Düng.* 37, 1935 (149-174). [G.]

**631.4 : 541.134.5—Gantimurov, I. I.** The oxidation-reduction conditions and the main properties of soil. *Ztschr. Pflanz. Düng.* 45, 1936 (55-83). [G.]

**631.4 : 548.5—Schultze, K.** Salt efflorescence. *Kolloid-Beih.* 44, 1936 (1-96). [G.]

**631.4 : 549—Jeffries, C. D.** Minerals in soils. *Pa. Agric. Expt. Sta. Bull.* 308, 1934 (11-12). C.A. 30 (1482).

**631.4 : 549—Bray, R. H. ; Grim, R. E. ; Kerr, P. F.** Application of clay mineral technique to Illinois clay and shale. *Bull. Geol. Soc. Amer.* 46, 1935 (1909-1926). C.A. 30 (2532).

**631.4 : 549—Edelman, C. H.** Mineralogical problems in relation to the study of soil. *Cong. Int. Mines, Metall. Geol. Appl.*, 7th Sess., Paris, Oct. 1935, Geol. Sect.

**631.4 : 549—Zemiatichensky, P. A.** The role of mineralogy in soil science. *Pedology* No. 5, 1934 (609-613). [R.e.]

**631.4 : 549—Agafonoff, V.** Mineralogical study of the soil. *Proc. 3rd Int. Cong. Soil Sci.* 3, 1936 (74-78). [F.]

**631.4 : 549—Belousova, V. T.** Determining the mineralogical composition of the fine fractions of sedimentary rocks and soils by the immersion method. *Trans. Dokuchaev Soil Inst.* 13, 1936 (31-43). C.A. 31 (5300). [R.e.]

**631.4 : 549—Correns, C. W. ; Schlünz, F. K.** Mineralogical investigation of three Mecklenburg soils. *Ztschr. Pflanz. Düng.* 44, 1936 (316-326). [G.]

**631.4 : 549—Moshev, A. I.** Separation of minerals by heavy liquids on the principle of continuous centrifuging. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (501-509). [R.]

**631.4 : 549—Nicholls, A.** The mineralogy of the sand fractions of some Victorian soils. *Proc. Roy. Soc. Victoria* 49 (n.s.), 1936 (17-35).

**631.4 : 549—Carroll, D.** Some aspects of soil mineralogy. *J. Roy. Soc. W. Aust.* 23, 1936-37 (7-12).

**631.4 : 549—Drulif, J. H.** Changes and deformations of minerals in Deli soils. *Bull. Deli Proefsta. Medan* 38, 1937, pp. 32. [Duc.]

**631.4 : 549—Glasscock, H. H.** Scheme for the examination of soil detritals. *J. S.E. Agric. Coll., Wye.* No. 40, 1937 (92-97).

**631.4 : 549—Jeffries, C. D.** The mineralogical composition of the very fine sands of some Pennsylvania soils. *Soil Sci.* 43, 1937 (357-366).

## FERTILIZERS AND GENERAL AGRONOMY

- 631.4 : 549—Marshall, C. E.** Soil science and mineralogy. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (23-31).
- 631.4 : 55—Ponomarev, G. M.** Chemical characteristics of carbonate and sulphate concretions in relation to soil genesis. *Trudy Gdroiz Inst. Udob. Leningr. Lab.*, No. 36, 1935 (146-162). [R.]
- 631.4 : 55—Stauffer, R. S.** Influence of parent material on soil character in a humid, temperate climate. *J. Amer. Soc. Agron.* 27, 1935 (875-894).
- 631.4 : 55—Brade-Birks, S. G.** The geology of the soil. *J. S.-E. Agric. Coll., Wye*, No. 38, 1936 (167-169).
- 631.4 : 551.432—Wasowicz, T.** Researches on mountain soils. *Poliska Akad. Um. Prace Roln.-Leśne* 1933, pp. 48. P.I.S. 10 (198).
- 631.4 : 551.432—Rigotard, L.** The evolutionary factors of alpine soils. *Bull. Assoc. Franç. Ét. Sol* 1, 1935 (35-45). [F.]
- 631.4 : 551.432—Stiny, J.; Kuhn, K.; Winter, A.** The investigation of high mountain soils. *Geol. u. Bauwes.* 7, 1935 (22-28). P.I.S. 10 (74). [G.]
- 631.4 : 551.432—Mikhailovskaia, O. N.** Genesis of high mountain soils. *Trans. Dokuchaev Inst.* 13, 1936 (315-366). [R.e.]
- 631.4 : 551.58—Chaptal.** Pedological climate. *Bull. Assoc. Franç. Ét. Sol* 2, 1936 (192-208). [F.]
- 631.4 : 551.58—Novak, V.** The idea and some problems of the soil climate. *Soil Res.* 5, 1936 (57-74). [G.e.f.]
- 631.4 : 551.58—Chaptal.** Pluviosity and soil climate. *Bull. Assoc. Franç. Ét. Sol* 3, 1937 (21-27). [F.]
- 631.4 : 551.58—Demolon, A.** Soil climate. *Ann. Agron.* 7 (n.s.), 1937 (625-640). [F.]
- 631.4 : 551.58—Demolon, A.** Soil climate. *Bull. Assoc. Franç. Ét. Sol* 3, 1937 (147-148). [F.]
- 631.4 : 552.323—Albert, R.** Pumice sands as forest soils and as a soil type. *Forstarchiv* 11, 1935 (129-133). C.A. 29 (6989). Z.P.D. 42 (118).
- 631.4 : 552.323—Milne, G.** The extent to which volcanic rocks give rise to distinctive soils, examined from East African occurrences. *Proc. 2nd Conf. E. Afric. Agric. Chem. Abs.* 3, 1935 (49-50).
- 631.4 : 552.323—Shioiri, M.** The nature of the clayey substance of oxyphilic volcanic ash soils. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (70-73). [G.]
- 631.4 : 62—Trullinger, R. W.** Soil science and engineering. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (7-22).
- 631.4 : 620.19—Denison, I. A.; Hobbs, R. B.** Corrosion of ferrous metals in acid soils. *Bur. Stand. J. Res.* 13, 1934 (125-150). E.S.R. 71 (860).
- 631.4 : 620.19—Ewing, S.** Corrosion surveys for transmission lines and distributing systems. *Proc. Amer. Gas Assoc.* 1934 (846-862). C.A. 29 (6997).
- 631.4 : 620.19—Johnston, J.** Corrosion problems. *Indust. Engng. Chem.* 26, 1934 (1238-1244).
- 631.4 : 620.19—Denison, I. A.; Ewing, S. P.** Corrosiveness of certain Ohio soils. *Amer. Soil Surv. Bull.* 16, 1935 (81-84).
- 631.4 : 620.19—Denison, I. A.; Ewing, S. P.** Corrosiveness of certain Ohio soils. *Soil Sci.* 40, 1935 (287-299).
- 631.4 : 620.19—Ewing, S.** Observations on soil corrosion mitigation in the gas industry. *Amer. Gas Assoc. Mo.* 17, 1935 (469-471).



# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.4 : 620.19**—Putnam, J. F. Soil corrosion. *Proc. Amer. Petroleum Inst. Sect. IV*, 16, 1935 (66–74). C.A. 30 (3559).
- 631.4 : 620.19**—Denison, I. A. Electrolytic measurement of the corrosiveness of soils. *Bur. Stand. J. Res.* 17, 1936 (363–387). B.C.A. 56 (70).
- 631.4 : 620.19**—Journal of the Franklin Institute. Soil corrosion studies, 1934. *J. Franklin Inst.* 1936 (752–753).
- 631.4 : 620.19**—Logan, K. H. Soil-corrosion studies, 1934. Rates of loss of weight and pitting of ferrous specimens. *Bur. Stand. J. Res.* 16, 1936 (431–466). C.A. 30 (5924).
- 631.4 : 620.19**—Logan, K. H. Soil-corrosion studies, 1934. Rates of loss of weight and penetration of non-ferrous materials. *Bur. Stand. J. Res.* 17, 1936 (781–804). B.C.A. 56 (268).
- 631.4 : 620.19**—Logan, K. H.; Ewing, S. P. Soil-corrosion studies, 1934. Field tests of non-bituminous coatings for underground use. *Bur. Stand. J. Res.* 18, 1936 (361–388). B.C.A. 56 (566).
- 631.4 : 625.7,8**—Bezruk, V. The mechanical composition as an index to the physico-mechanical properties of soils and subsoils. *Pedology* No. 2, 1935 (202–218). [R.g.]
- 631.4 : 625.7,8**—Filatov, M. M. The actual problems of ground investigation in the light of Socialist construction in the U.S.S.R. *Trans. Int. Soc. Soil Sci. Soviet Sect. A*, 1935 (202–206).
- 631.4 : 625.7,8**—Stradling, R. E. Problems of road research. *J. Roy. Soc. Arts* 84, 1936 (1161–1178).
- 631.4 : 625.7,8**—Chemistry and Industry. Road research. Present position to-day. *Chem. Indust.* 56, 1937 (681–682).
- 631.4 : 625.7,8**—Hogentogler, G. A. Soil characteristics in relation to highway engineering. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (377–382).
- 631.4 : 63**—Larne, P. Pedology and agronomy. *Rev. Agric. Afr. Nord* 18, 830, 1935 (407–408). *Rev. Geol.* 16 (135).
- 631.4.061.6**—Shaw, C. F. The need for studies of soil colour. *Trans. Int. Soc. Soil Sci. Comm.* 1, Versailles, 1934 (169–178). [E.]
- 631.4.061.6**—Taylor, J. K. Soil colour classes. *J. Aust. Inst. Agric. Sci.* 1, 1935 (111–113).
- 631.4.061.6**—Shaw, C. F. Soil colours, measured by the disc colour analyser. *Proc. 3rd Int. Cong. Soil Sci.* 3, 1936 (78–81).
- 631.4.061.6**—Deger, E. C. Colour of cultivated soils of Central America. *Bodenk. PflErndhr* 4, 1937 (161–173). B.C.A. 56 (1095). [G.]
- 631.4(083.72)**—Brade-Birks, S. G. International rules of pedological nomenclature. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (338–339).
- 631.4(083.72)**—Prescott, J. A. The nomenclature of soils. *J. Aust. Inst. Agric. Sci.* 1, 1935 (155–158).
- 631.4(083.72)**—Shaw, C. F. New soil series names, 1933–34. *Amer. Soil Surv. Bull.* 16, 1935 (6).
- 631.4(083.72)**—Shaw, C. F. Terms indicating origin of soils. *Amer. Soil Surv. Bull.* 16, 1935 (4). B.C.A. 55 (383).
- 631.4(083.72)**—Brade-Birks, S. G. The nomenclature and terminology of soils. *J. S.-E. Agric. Coll. Wye*, No. 38, 1936 (165–166).
- 631.4(083.72)**—Lenglen, M. Folklore contribution to a study of the soil. *Bull. Assoc. Franç. Ét. Sol* 2, 1936 (25–34).

## FERTILIZERS AND GENERAL AGRONOMY

**631.4(083.72)—Prasolov, L. I.** Elaboration of a unified soil classification and nomenclature. *Pedology* No. 4, 1936 (632-638).

**631.4(083.72)—Shaw, C. F.** New soil series names, 1934-35. *Amer. Soil Surv. Bull.* 17, 1936 (100-101).

### 631.411 TEXTURAL AND CHEMICAL SOIL VARIETIES

**631.411.1 : 581.5—Fehér, D.** Value of plant associations of some sandy soils in characterizing the soils. *Zschr. Pflanz. Düng.* 40, 1935 (129-137). B.C.A. 54 (1108). [G.]

**631.411.1 : 581.5—Magyar, P.** Plant ecological investigations on the sandy plains of Hungary. *Erdész. Kísér.* 38, 1936 (209-233). [G.]

**631.411.1 : 631.46—Fehér, D.** Biochemical investigations of sandy soils of the Hungarian plain, with special reference to their afforestation. *Math. Naturw. Anz. Ungar. Akad. Wiss.* 55, 1936 (133-172). [Cz.g.]

**631.411.1 : 631.51—Maher, C.** A note on cultivation methods in light soils. *E. Afric. Agric. J.* 1, 1936 (318-319).

**631.411.1 : 631.67—Larson, C. A.** Effects of continued application of irrigation water and of fertilizers to Ephrata fine sand in the Wenatchee orchard district. *Wash. St. Coll. Res. Stud.* 5, No. 1, 1937 (22). C.A.S.B. 4 (3).

**631.411.1 : 631.81—Sobolev, S. S.** Applying hydrogeological methods to the problem of the mineral fertilization of sands. *Doklady Inst. Studies Genesis Geography Soils*, 1935 (225-228). [E.]

**631.411.1 : 631.81—Russell, E. J.** Fifty years' continuous field experiments at Woburn, a sub-station of Rothamsted Experimental Station. *Landw. Jahrb.* 84, 1937 (161-261). [G.]

**631.411.2 : 619—Marston, H. R.** Problems associated with "coast disease" in South Australia. *Aust. J. Coun. Sci. Indust. Res.* 8, 1935 (111-116).

**631.411.2 : 631.415.1—Tommasi, G.; Marimpietri, L.** Hydrogen-ion concentration of calcareous soils. *Ann. Sta. Chim. Agrar. Roma* 14, No. 296, 1933, pp. 15. B.C.A. 56 (594).

**631.411.2 : 631.415.1—Buehrer, T. F.; Williams, J. A.** The hydrolysis of calcium carbonate and its relation to the alkalinity of calcareous soils. *Aric. Agric. Expt. Sta. Tech. Bull.* 64, 1936, pp. 41.

**631.411.2 : 631.416.2—McGeorge, W. T.; Buehrer, T. F.; Breazeale, J. F.** Phosphate availability in calcareous soils: a function of carbon dioxide and pH. *J. Amer. Soc. Agron.* 27, 1935 (330-335).

**631.411.2 : 631.81—Joret, G.; Malterre, H.** Examination of a calcareous soil with regard to its fertilizing. *Bull. Assoc. Franç. Ét. Sol* 2, 1936 (106-113).

**631.411.3—Smith, A.** Characteristics of adobe soils. *Amer. Soil Surv. Bull.* 14, 1933 (79-82). C.A. 27 (4612).

**631.411.3 : 631.415.1—Aoki, M.; Osugi, S.** Investigation on the nature of the acidoid of a clay soil. *J. Sci. Soil Japan* 8, 1934 (266-284).

**631.411.3 : 631.432.3—Nicholson, H. H.** The drainage properties of heavy soils. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (385-388).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.411.3 : 631.432.3**—Childs, E. C. The transport of water through heavy clay soils, I. *J. Agric. Sci.* 26, 1936 (114-126).
- 631.411.3 : 631.432.3**—Childs, E. C. The transport of water through heavy clay soils, III. *J. Agric. Sci.* 26, 1936 (527-545).
- 631.411.3 : 631.432.3**—Nicholson, H. H.; Childs, E. C. The transport of water through heavy clay soils, II. *J. Agric. Sci.* 26, 1936 (127-141).
- 631.411.3 : 631.44**—Aarnio, B. Can one classify clay soils on the basis of their mechanical composition? *Maat. Aikak.* 9, 1937 (149-151). [Fig.]
- 631.411.3 : 631.67**—Draghetti, A. Determination of the water requirement of compact soils, with particular reference to their autumnal residual moisture and their workability. *Ann. Sta. Sper. Agrar. Modena* 3, 1934 (287-301). [I.]
- 631.411.4**—Aarnio, B. Gytija soils. *Boletn. PpErnadh.* 2, 1937 (186-192). [G.]
- 631.411.4 : 541.134.5 : 631.821.1**—Willis, L. G. Some potential changes induced by liming suspensions of a peat soil. *N.C. Agric. Expt. Sta. Tech. Bull.* 47, 1934, pp. 16. E.S.R. 73 (20).
- 631.411.4 : 546.22**—Joret. Effect of sulphur in moor cultivation. *Rapp. Inst. Rech. Agron. Paris, 1932, 1933* (216). Z.P.D. 37 (365). F.
- 631.411.4 : 581.186.3**—Jones, W. N. Organic soils and epimastic response. *Nature* 136, 1935 (554). B.C.A. 54 (1061).
- 631.411.4 : 631.415.1**—Segeberg, H. The acidity of moor soils, especially that due to iron sulphide, and its analytical determination. *Boletn. PpErnadh.* 4, 1937 (50-64). [G.]
- 631.411.4 : 631.416**—Okamoto, H. Investigation of a peaty soil and its leached substratum. *J. Sci. Soil Japan* 8, 1934 (257-265). [J.]
- 631.411.4 : 631.416**—Rheinwald, H.; Stahl, H.; Lebtig, O. The determination of nutrient status of moor soils. *Ztschr. Pflanz. Dung.* 36A, 1934 (129-155). [G.]
- 631.411.4 : 631.416**—Popp, M. Fertility of marsh soils. *Das Superphosphat* 11, 1935 (103-105). C.A. 30 (1484).
- 631.411.4 : 631.416**—Hjertstedt, H. The properties of peat soils in different counties with reference to peat type, degree of decomposition and lime and nitrogen content. *Scenska MossFören. Tidskr.* 50, 1936 (448-484). [Swf.]
- 631.411.4 : 631.416.1**—Neller, J. R. The availability to crops of the nitrogen of Everglades peat. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (421-423).
- 631.411.4 : 631.416.2**—Kazakov, E. I. Adsorption of phosphates by moor soils. *Pedology* No. 4, 1934 (439-500). [Re.]
- 631.411.4 : 631.416.2**—Vries, O. de; Hettterschij, C. W. G. The phosphoric acid economy in Moorkolonial (reclaimed) soil. *Phosphorsäure* 5, 1935 (38-62). [G.]
- 631.411.4 : 631.416.2**—Enfield, G. H.; Conner, S. D. The fixation of potash by muck soils. *J. Amer. Soc. Agron.* 28, 1936 (146-155).
- 631.411.4 : 631.436.6**—Tacke, B. Frost phenomena on moor soils. *Biolchim. Reib. Met. Ztschr.* 2, 1935 (86-88). *Bied. Zbl.* 65 (378).
- 631.411.4 : 631.44**—Cosby, S. W.; Shaw, C. F. Character and classification of the organic soils of the delta region, California. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (413-416).

# FERTILIZERS AND GENERAL AGRONOMY

**631.411.4 : 631.44** Dachnowski-Stokes, A. P. Essentials of a general system of classifying organic soils. *Amer. Soil Surv. Bull.* 16, 1935 (105-109).

**631.411.4 : 631.44** Dachnowski-Stokes, A. P. Essentials of a general system of classifying organic soils. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (416-418).

**631.411.4 : 631.44** Robertson, I. M.; Fraser, G. K. The classification of moorland in Scotland. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (418-419).

**631.411.4 : 631.461** Verona, O. Microbiological investigations of a peat soil. *Arch. Mikrobiol.* 5, 1934 (328). *Z.P.D.* 38 (188). [L.]

**631.411.4 : 631.512** Van'kevich, A. P. The effect of different ploughing systems on the physico-chemical condition of peat soils, and on the yield and weediness of spring sown crops. *Pedology* No. 5, 1937 (714-728). [R.g.]

**631.411.4 : 631.589** Turnas, P. A. Surface burning of bogs and its effect on the fertility of peat soils. *Khim. Sotsial. Zemled.* No. 6, 1936 (31-46). [R.g.]

**631.411.4 : 631.62** Clarté, R. The cultivation of high peat in the Netherlands. *J. Agric. Sci.* 64, 1935 (536-540); 65, 1936 (13-16).

**631.411.4 : 631.62** Cayton, B. S. Subsidence of peat soils in Florida. *U.S.D.A. Bur. Agric. Engng.* 1936, pp. 15. *E.S.R.* 76 (111).

**631.411.4 : 631.81** Osvald, H. Manuring of peat soils. *Göteborg, 1934. Herb. Abs.* 5 (197).

**631.411.4 : 631.81** Konrads, P. The effect of potash and phosphates on herbage of peat soils. *Lauksaimn. Mënisk.* No. 5, 1935 (269-298). No. 6, 1935 (371-412). *Herb. Abs.* 5 (286).

**631.411.4 : 631.81** Ligon, W. S. The solubility of applied nutrients in muck soils and the composition and quality of certain crops as influenced by soil reaction changes and moisture conditions. *Mich. Agric. Expt. Sta. Tech. Bull.* 147, 1935 (51). *E.S.R.* 75 (171). *C.A.* 30 (5344).

**631.411.4 : 631.81** Titta, G. Tests of P-K and N fertilizing on recently reclaimed peat soils and on poor calcareous soils. *Ist. Agrar. Proa. Boll.* 11, 1935 (198-207). [I.]

**631.411.4 : 631.828** Bakhulin, M. D. The action of lime, magnesium and copper on high peat soils. *Khim. Sotsial. Zemled.* No. 7, 1934 (48-55). *C.A.* 29 (6997).

**631.411.4 : 631.828** Harmer, P. M. Recent developments in fertilizing muck soil. *Ohio Veg. Grow. Assoc. Proc.* 1935 (136, 138-142, 144). *C.A.* 29 (7554).

**631.411.4 : 631.828** Bourne, B. A. Special chemicals and the ripening of sugar cane on raw peat soils. *Facts ab. Sug.* 32, 1937 (21-22, 42).

**631.411.4 : 631.83** Rappe, G. Increasing amounts of potassium in 40% potash fertilizer and in cement potash. A nine years' experiment on recently cultivated sphagnum peat soil at Flahult. *Svenska Vetensk.Fören. Tidskr.* 51, 1937 (1-20). [S.w.e.]

**631.411.4 : 631.874** Neller, J. R.; Daane, A. The response to green manuring of crop growth on Everglades peat. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (423-425).

**631.411.9** Spirhanzl, J. On rendzina soils. *Zem. Arch.* 9-10, 1934. *Z.P.D.* 10 (61).

## BIBLIOGRAPHY OF SOIL SCIENCE

**631.411.9 Kotzmann, L. G.** Genetic and chemical characteristics of rendzina soils. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (296-297).

**631.411.9 Pelišek, J.** Characteristics of rendzina soils on the limestone of the Upper Chalk formation, West Moravia. *Sborn. Čsl. Akad. Zemed.* 11, 1936 (561-569). (Cz.)

### 631.412 4 PHYSICO-CHEMICAL PROPERTIES OF SOILS

**631.412 Antipov-Karataev, I. N.** Investigations on the physico-chemical properties of soils during the last few years in the U.S.S.R. *Khim. Sotsial. Zemed.* Nos. 9-10, 1935 (3-9). (R.)

**631.412 Antipov-Karataev, I. N.** New research on the physico-chemical properties of the soils of the U.S.S.R. *Trans. Int. Soc. Soil Sci. Soviet Sect. A*, 1935 (79-90). (F.)

**631.412 : 541.128 Matsuno, T.; Ichikawa, C.** Catalytic action of Japanese soils. *Gifu Imp. Coll. Agric. Res. Bull.* No. 37, 1934, pp. 32. (B.C.A. 54 (37)).

**631.412 : 541.128 Baeyens, J.; Livens, J.** Catalytic power of a soil and fertility. *Agricultura, Louvain* 39, 1936 (145-155). (C.A. 30 (8467)).

**631.412 : 541.128 Kanivets, I. I.; Korneeva, N. P.** Catalytic effect of the soil. *Sborn. Rab. VNIIS*, 1936 (556-558). (R.)

**631.412 : 541.128 Scharrer, K.** Catalytic characteristics of the soil. *ForschDienst* 1, 1936 (824-831). (G.)

**631.412 : 551.577 Jenny, H.; Leonard, C. D.** Functional relationship between soil properties and rainfall. *Soil Sci.* 38, 1934 (363-381).

**631.412 : 631.51 Nemec, A.** The effect of forest-held culture on the physical and chemical properties of the soils of the region of the state forest Sasín in Slovakia. *Sborn. Čsl. Akad. Zemed.* 10, 1935 (590-598). (Cz.)

**631.413 Mattson, S.; Gustafsson, Y.** The electro-chemistry of soil formation. I. The gel and the soil complex. *Ann. Agric. Coll. Sweden* 4, 1937, pp. 54. (E.)

**631.413 Mattson, S.; Gustafsson, Y.** The laws of soil colloidal behaviour. XVIII. Colloidal electrolytes. *Soil Sci.* 43, 1937 (420-452).

**631.413 Mattson, S.; Gustafsson, Y.** The laws of soil colloidal behaviour. XIX. The gel and the soil complex in soil formation. *Soil Sci.* 43, 1937 (453-471).

**631.413 Mattson, S.; Hou, Kwang-Chiung.** The laws of soil colloidal behaviour. XX. The neutral salt effect and the amphoteric points of soils. *Soil Sci.* 44, 1937 (151-166).

**631.413 Mattson, S.; Wiklander, L.** The equi-ionic point and the point of exchange neutrality of soils. *Ann. Agric. Coll. Sweden* 4, 1937 (169-189). (E.)

**631.413 : 537.213 Antipov-Karataev, I. N.; Rabinerson, A. I.** Electrical charge on soils brought about by acid and anions. *Trudy Geodiz. Inst. Udob. Leningr. Lab.* 17, 1933 (191). (Z.P.D. 38 (181)). (R.)

**631.413 : 537.213 Davydov, G. K.** Electric charge of soil particles. *Trudy Tsentr. Nauch. Inst. Sakh. Prom. (Moscow)*, No. 18, 1934 (333-340). (C.A. 29 (8198)).

## FERTILIZERS AND GENERAL AGRONOMY

- 631.413 : 537.213**—Davydov, G. K. Characterization of the electrical charge of soil particles. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (567–568). [R.]
- 631.413 : 537.213**—Gleria, J. dl. The relation between the electric charge of soil particles and the texture of soils. *Mezőg. Kutat.* 9, 1936 (61–70). [H.e.]
- 631.413 : 631.416**—Hester, J. B. The amphoteric nature of three Coastal Plain soils: II. In relation to the leaching and absorption of soil constituents by plants. *Soil Sci.* 39, 1935 (247–254).
- 631.413 : 631.445.2**—Mattson, S.; Nilsson, I. The chemical characteristics of soil profiles. III. The podsol complex. *LantbrHögsk. Ann.* 2, 1935 (115–134). [E.sw.]
- 631.413.1**—Mautner, S. Investigation on the buffer effect of soils. *Ztschr. Pflanz. Düng.* 36A, 1934 (353–362). [G.]
- 631.413.1**—Semenchenko, V. K.; Gracheva, A. F.; Davidovskaya, E. A. Buffer phenomena in the field of surface tension. *Kolloid. Zh.* 1, No. 5, 1935 (367–383). *Pedology* 1937 (277).
- 631.413.1 : 631.415.1**—Goy, S. Electrometric titration and the "law of the base containing space" of the soil. *ForschDienst.* 2, 1936 (345–353). [G.]
- 631.413.1 : 631.445.2**—Marchenko, A. I. Buffer properties of soils of the Valdai Highlands. *Trans. Dokuchaev Inst.* 10, 1934 (107–123). B.C.A. 54 (198).
- 631.413.1 : 631.84**—Koritskaia, T. D. The buffer action of the soil in relation to the additional components of nitrogenous fertilizers. *Trudy Nauch. Inst. Udob.* 126, 1935 (98–103). [R.g.]
- 631.413.4**—Bottini, O. Thermal decomposition of ammonium clays. *Atti. Accad. Lincei* 23, 1936 (142–149). [I.]
- 631.413.4**—Pranishnikov, A. M. Dependence of amount of cation adsorbed by soil on dilution of the leaching solution. *Trudy Gedroiz Inst. Udob. Leningr. Lab.* 2, 1933 (111–120). C.A. 29 (1918). [R.]
- 631.413.4**—Gapon, E. N. Exchange reactions of soil. *Trans. Int. Soc. Soil Sci. Soviet Sect. 2nd Comm.* A1, 1934 (35–48). [G.]
- 631.413.4**—Gorbunov, N. I. The problem of studying the energy of cation adsorption. *Khim. Sotsial. Zemled.* No. 12, 1934 (61–64). C.A. 30 (797).
- 631.413.4**—Jennings, D. S.; Gardner, W.; Israelsen, O. W. Technical studies of the physical and physico-chemical properties and processes in soils. *Utah Agric. Expt. Sta. Bull.* 250, 1934 (60). C.A. 30 (1919).
- 631.413.4**—Nikolsky, B. P. The exchange adsorption of cations in soils. *Trans. Int. Soc. Soil Sci. Soviet Sect. 2nd Comm.* A1, 1934 (23–34). [G.]
- 631.413.4**—Tiulin, A. F. Some notes on the theses of Prof. K. K. Gedroiz. *Trans. Int. Soc. Soil Sci. Soviet Sect. 2nd Comm.* A1, 1934 (13–22). [G.]
- 631.413.4**—Wiegner, G. Colloid chemistry and soil science. *Cong. Int. Chim. Pure Appl. 9th Cong. Madrid* 7, 1934 (5–51). [G.]
- 631.413.4**—Yarusov, S. S.; Dmitrienko, O. I. The mobility of adsorptively bound cations in soils. *Trans. Int. Soc. Soil Sci. Soviet Sect. 2nd Comm.* A1, 1934 (49–72). [G.]

## BIBLIOGRAPHY OF SOIL SCIENCE

- 631.413.4—Alten, F. ; Kurmies, B.** On the conformity of base-exchange phenomena to physico-chemical laws. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (59–62). E.S.R. 76 (695). [G.]
- 631.413.4—Alten, F. ; Kurmies, B.** The physico-chemical laws governing base exchange in mineral soils. *Ernähr. Pflanz* 31, 1935 (401–407). [G.]
- 631.413.4—Hissink, D. J.** The base exchange phenomenon of the soil. *Trans. 3rd Int. Cong. Soil Sci.* 2, 1935 (60–74). [G.]
- 631.413.4—Lavollay, J.** Base exchange in soils. *Chim. Indust.* 33, 1935 (1064–1071). B.C.A. 54 (646).
- 631.413.4—Sedletsy, I. D.** The crystalline nature of soil colloids and the exchange reaction of cations and anions in the soil. *Priroda* 1935 (22–29). *Pedology* 1935 (905). [R.]
- 631.413.4—Tokuoka, M.** Cation exchange in clays. *Bull. Agric. Chem. Soc. Japan* 11, No. 1, 1935. P.I.S. 10 (124).
- 631.413.4—Wiegner, G.** Ionic exchange and structure. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (5–28). E.S.R. 77 (306).
- 631.413.4—Antipov-Karataev, I. N. ; Antipova-Karataeva, T. F.** Description of cations from the soil. *Khim. Sotsial. Zemled.* No. 4, 1936 (46–66). [R.]
- 631.413.4—Austerweil, G.** The mechanism of the phenomenon of base exchange. *Bull. Soc. Chim. Fr.* 3, 1936 (1782–1790). C.A. 31 (306).
- 631.413.4—Chaminade, R. ; Drouineau, G.** The evolution of exchangeable cations in soils. *Bull. Assoc. Franç. Ét. Sol* 2, 1936 (114–121). [F.]
- 631.413.4—Chaminade, R. ; Drouineau, G.** Investigations on the chemical mechanism of exchangeable cations. *Ann. Agron.* 6 n.s., 1936 (677–690). [F.]
- 631.413.4—Delforge, A.** Adsorption of alkali and alkaline earth cations in colloidal clay medium. *Chim. Indust.* 35, 1936 (1276–1279). C.A. 30 (6104). [F.]
- 631.413.4—Gieseck, J. E. ; Jenny, H.** Behaviour of polyvalent cations in base exchange. *Soil Sci.* 42, 1936 (273–280).
- 631.413.4—Jenny, H.** Simple kinetic theory of ionic exchange I. Ions of equal valency. *J. Phys. Chem.* 40, 1936 (501–517).
- 631.413.4—Wiegner, G.** Ion exchange and structure. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 5–28. [G.]
- 631.413.4—Zemlatchensky, P. A.** The absorption complex problem. *Trans. Dokuchay Inst.* 13, 1936 (45–50). [R.]
- 631.413.4—Gapon, E. N. ; Prilishnikova, A. E.** Adsorption of univalent cations by the soil. *Khim. Sotsial. Zemled.* No. 2, 1937 (48–51). [R.]
- 631.413.4—Møller, J.** Ion exchange with special reference to agricultural chemistry. *Kolloid-Beih.* 46, 1937 (1–112). B.C.A. 56 (953). [G.]
- 631.413.4 : 541.134.5—Cooper, P. ; Paden, W. R.** The intensity of removal of added cations from soil colloids by electro-dialysis. *J. Amer. Soc. Agron.* 28, 1936 (597–608).
- 631.413.4 : 549—Jacob, A. ; Hofmann, U. et al.** Chemical and X-ray investigations on the mineral base exchange material in soil. *Angew. Chem.* 48, 1932, pp. 9. [G.]
- 631.413.4 : 549—Marshall, C. E.** Layer lattices and the base exchange clays. *Ztschr. Kristallog.* 91A, 1935 (433–449). [E.]

# FERTILIZERS AND GENERAL AGRONOMY

- 631.413.4 : 549**—Perkins, A. T. ; King, H. H. Base exchange in soils. *Trans. Kans. Acad. Sci.* 38, 1935 (163–170).
- 631.413.4 : 549**—Edelman, C. H. Relations between the crystal-structure of minerals and their base exchange capacity. *Proc. 3rd Int. Cong. Soil Sci.* 3, 1936 (97–99).
- 631.413.4 : 549**—Hofmann, U. ; Bilke, W. Inter-crystalline swelling and the base exchange capacity of montmorillonite. *Kolloid-Ztschr.* 77, 1936 (238–251). [G.]
- 631.413.4 : 549**—Kelley, W. P. The significance of crystallinity in relation to base exchange. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (92–95).
- 631.413.4 : 549**—Kelley, W. P. ; Jenny, H. The relation of crystal structure to base exchange and its bearing on base exchange in soils. *Soil Sci.* 41, 1936 (367–382).
- 631.413.4 : 549**—Jung, H. Contribution to the knowledge of montmorillonite. I. Investigation on Dolmar montmorillonite (yellow). *Chem. Erde* 11, 1937 (287–293). [G.]
- 631.413.4 : 625.7.8**—Winterkorn, H. F. The application of base exchange and soil physics to problems of highway construction. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (93–99).
- 631.413.4 : 631.411.4**—Wilson, B. D. ; Staker, E. V. Ionic exchange of peat soils. *Cornell Agric. Expt. Sta. Mem.* 172, 1935, pp. 13.
- 631.413.4 : 631.416.2**—Pugh, A. J. ; Du Toit, M. S. The composition and ionic exchange of ferric silicates and phosphates. *Soil Sci.* 41, 1936 (417–431).
- 631.413.4 : 631.472**—Mitchell, R. L. Base exchange equilibria in soil profiles. *J. Agric. Sci.* 27, 1937 (557–568).
- 631.413.41.2**—Fudge, J. F. Mathematical relations between total exchange capacity and absorption of ammonium and potassium by soils. *Soil Sci.* 40, 1935 (269–284).
- 631.413.41.2**—Mattson, S. ; Csiky, J. S. The laws of soil colloidal behaviour. XVI. The cation exchange-maximum in aluminosilicates. *Soil Sci.* 39, 1935 (161–165).
- 631.413.41.2**—Mattson, S. ; Gustafsson, Y. The neutral salt reaction in relation to the point of exchange neutrality, the saturation and the combining capacity of a soil. *LantbrHögsk. Ann.* 2, 1935 (135–157). [E.s.w.]
- 631.413.41.2**—Bär, A. L. S. Systematic changes in the exchange capacity of clay. *Diss. Wageningen*, 1936, pp. 148. [D.u.e.]
- 631.413.41.2**—Gunar, N. I. ; Doroshenko, E. L. The simplest quantitative relation in soil cation exchange. *Khim. Sotsial. Zemled.* No. 11, 1936 (68–76). [R.]
- 631.413.41.2**—Hudig, J. ; Roborgh, R. H. J. The uniform behaviour of the Netherlands clay substance in exchange reactions. *Landbouwk. Tijdschr.* 46, 1936 (33–39). C.A. 30 (4603). [Du.]
- 631.413.41.2**—Kamoshita, Y. On the effect of heating soil upon the exchange capacity of soils. *J. Sci. Soil Japan* 11, 1937 (343–348). [J.e.]
- 631.413.41.2 : 631.414.2**—Bruin, P. Total base-exchange capacity of soil and its relation to humus and clay content. *Rec. Trav. Chim.* 55, 1936 (192–204). B.C.A. 55 (513).
- 631.413.41.2 : 631.417.2**—Bartlett, J. B. ; Ruble, R. W. ; Thomas, R. P. The influence of hydrogen peroxide treatments



# BIBLIOGRAPHY OF SOIL SCIENCE

on the exchange capacity of Maryland soils. *Soil Sci.* 44, 1937 (123-138).

**631.413.41 2 : 631.432.5** Aleshin, S. N. Correlation of the absorbing capacity and hygroscopic water in soils. II. Dependence of soil hygroscopicity on the composition of replaceable cations. *Khim. Sotsial. Zemled.* 1934 (37-45). *Pedology* 1935 (900). [R.]

**631.413.41 2 : 631.445.7**—Craig, N. Base exchange capacity of soils. *Mauritius-Sugarcane Res. Sta. 5th Ann. Rept. 1934*, 1935 (21-22).

**631.413.41 2 : 631.445.7**—Marel, H. W. van der. A study on the cation and anion adsorption of tropical and Dutch soils. *Thesis Wageningen* 21 Feb. 1935, pp. 150. [Duc.]

**631.413.41/2 : 631.85**—Aldinian, R. Kh. The influence of phosphates on the cation absorption capacity of the principal soil types of the U.S.S.R. *Khim. Sotsial. Zemled.* No. 4, 1935 (13-22). [R.]

**631.413.41 2 : 631.85**—Prince, A. L.; Toth, S. J. The effect of phosphates on the cation exchange capacity of certain soils. *Soil. Sci.* 42, 1936 (281-290).

**631.413.41 2 : 631.85**—Hester, J. B. The influence of phosphate fertilization upon the amphoteric properties of Coastal Plain soils. *J. Amer. Soc. Agron.* 29, 1937 (10-16).

**631.413.41 : 537.213**—Anguera, A. O.; Cárcer, M. V. de. Intimate problem of radicular assimilation. *Arxius* 1935 (122-141). C.A. 29 (6343).

**631.413.41 : 631.412**—Antipov-Karataev, I. N.; Antipov-Karataeva, A. N.; Yasinovsky, A. N. Physico-chemical properties of soils as a function of composition and the relative exchange of cations. I. II. *Kolloid Zh.* 1, 1935 (257-289). C.A. 30 (8466).

**631.413.41 : 631.412**—Singh, D.; Nijawan, S. D. Base-exchange studies. I. A preliminary study of the effect of certain cations saturating the soil's exchange complex on its physico-chemical properties and their relation to plant growth. *Indian J. Agric. Sci.* 6, 1936 (956-972).

**631.413.41 : 631.416.4**—Antipov-Karataev, I. N.; Antipova-Karataeva, T. F. Methods of studying the adsorption of potassium by soils. *Doklady Inst. Studies Genesis Geography Soils*, 1935 (171-186). [E.]

**631.413.41 : 631.416.4**—Chaminade, R. On the transition of soil potassium to a non-exchangeable state. *C.R.* 203, 1936 (682-684). [F.]

**631.413.41 : 631.416.4**—Bondorff, K. A.; Damsgaard-Sørensen, P. Cation exchange in soils. II. Quantity of exchangeable potassium in relation to the results of field experiments. *Tidsskr. Planteavl.* 42, 1937 (285-298). [Da.]

**631.413.41 : 631.416.4**—Thomas, R. P.; Schueler, J. E. Potassium retained in the exchangeable form by some Maryland soils. *J. Amer. Soc. Agron.* 29, 1937 (17-22). C.A. 31 (1925).

**631.413.41 : 631.416.5**—Eaton, F. M.; Sokoloff, V. P. Absorbed sodium in soils as affected by the soil-water ratio. *Soil Sci.* 40, 1935 (237-247).

**631.413.41 : 631.416.5**—Kotzmann, L. Effect of increasing Na-saturation on the physical properties of soil. *Mezőg.-Kutat.* 8, 1935 (141-147).

# FERTILIZERS AND GENERAL AGRONOMY

**631.413.41 : 631.416.5—Ratner, E. I.** The influence of exchangeable sodium in the soil on its properties as a medium for plant growth. *Soil Sci.* 40, 1935 (459–468).

**631.413.41 : 631.416.5—Ratner, E. I.** The effect of exchangeable sodium in the soil on plant growth and the physical properties of the soil. *Khim. Sotsial. Zemled.* No. 3, 1935 (35–45). [R.g.]

**631.413.41 : 631.416.5—Ratner, E. I.** The influence of increasing amounts of exchange sodium in the soil on the growth of plants and on their assimilation of phosphoric acid from difficultly soluble phosphates. *Trans. Int. Soc. Soil Sci. Soviet Sect. A*, 1935 (185–189).

**631.413.41 : 631.416.5—Drouineau, G.** Study of the behaviour of exchangeable sodium in an alluvial soil. *Bull. Assoc. Franç. Ét. Sol* 2, 1936 (121–124). [F.]

**631.413.41 : 631.416.8—Gedroiz, K. K.** Exchangeable cations in the soil and the plant. III. Influence on crop yields of manganese, aluminium and certain other metals introduced in varying amounts into the adsorptive complex of soils. *Miner. Udob.* 1, 1932 (70). B.C.A. 54 (967).

**631.413.41 : 631.416.8—Kedrov-Zikhman, O. K.** The composition of adsorptively bound cations of podzol soils and crops. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (118–122). [G.]

**631.413.41 : 631.416.846—Sushko, S. Y.; Sushko, E. S.** The influence of exchangeable magnesium on the dispersion properties of soils. *Trudy Gedroiz Inst. Udob.* No. 34, 1934 (5–13). C.A. 28 (7403).

**631.413.41 : 631.416.846—Uvarova, A. V.; Kamlova, M. I.** The relation of exchangeable magnesium to the physical properties of soils. *Trudy Gedroiz Inst. Udob.* No. 34, 1934 (13–17). C.A. 28 (7403).

**631.413.41 : 631.416.846—Joffe, J. S.; Kardos, L. T.; Mattson, S.** The laws of soil colloidal behaviour: XVII. Magnesium silicate—its base exchange properties. *Soil Sci.* 40, 1935 (255–268).

**631.413.41 : 631.416.846—Shavrygin, P. I.** Influence of adsorptively bound magnesium on the physical properties of the soil. *Pedology* No. 2, 1935 (167–173). [R.g.]

**631.413.41 : 631.416.862.1—Alten, F.; Kurmies, B.** Physico-chemical laws in cation exchange in mineral soils. *Angew. Chem.* 48, 1935, pp. 10. [G.]

**631.413.41 : 631.416.871.1—Pavlov, E. F.** Absorbed manganese. *Gorki Agric. Inst. Rept.* 2, 1933 (3). B.C.A. 55 (34).

**631.413.41 : 631.416.871.1—Steenbjerg, F.** The exchangeable manganese in Danish soils and its relation to plant growth. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (198–201).

**631.413.41 : 631.416.871.1 : 631.81—Gilligan, G. M.** The effect of fertilizers and liming upon the electro-dialyzable manganese of Sassafras silt loam. *Soil Sci.* 41, 1936 (203–208).

**631.413.41 : 631.416.872—Kirsanov, A. T.** The significance for plants of a partial substitution of exchangeable bases with H and with subsequent introduction of Fe. *Trans. Dokuchaev Inst.* 10, 1934 (5–26). B.C.A. 54 (198). *Pedology* 1935 (917).

**631.413.41 : 631.43—Shavrygin, P. I.** The physical properties of soils in relation to the composition of absorbed bases of ortstein and podzolized soils. *Trans. Dokuchaev Inst.* 13, 1936 (51–99). [R.e.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.413.41 : 631.432.3**—Yarusov, S. S. Mobility of absorbed cations in different soils. *Khim. Sotsial. Zemled.* 1934 (65-72). *Pedology* 1935 (907). [R.]
- 631.413.41 : 631.433.2**—Kapp, L. C. Base exchange in rice soil. *Ark. Agric. Expt. Sta. Bul.* 280, 1932 (23-24). C.A. 28 (7403).
- 631.413.41 : 631.445** Yarusov, S. S. On the mobility of exchangeable cations in the soil. *Soil Sci.* 43, 1937 (285-303).
- 631.413.41 : 631.461** Castellani, E. The action of some microbial forms in pure culture on the polar absorption of the soil. *Boll. Soc. Int. Microbiol. Sez. Ital.* 8, 1936 (197-201). C.A. 31 (1930).
- 631.413.41 : 631.461.1.3** Kononova, M. Influence of exchangeable bases upon the processes of decomposition of organic matter in soils. *Trans. Dokuchayev Inst.* 14, 1937 (167-199). [R.]
- 631.413.41 : 631.547.2**—Gedroiz, K. K. The base exchange complex of soil as the colloidal part of soil and its reaction towards plants. *Trans. Int. Soc. Soil Sci. Soviet Sect. 2nd Comm.* 41, 1934 (7-12). [G.]
- 631.413.41 : 631.547.2** Germanov, N. Agrochemical study of the absorbing soil complex. *Khim. Sotsial. Zemled.* No. 12, 1934 (22-35). C.A. 30 (797).
- 631.413.41 : 631.547.2** Kedrov-Zikhman, O. K.; Kedrova-Zikhman, O. E. The effect of the composition of replaceable cations on the development of barley and clover. *Khim. Sotsial. Zemled.* 1934 (9-21). *Pedology* 1935 (913). [R.]
- 631.413.41 : 631.547.2** Delupis, Dojmi di. Plants and the polar absorption of the soil. Physiological removal of absorbed cations. *Zisch. Pflanz. Läng.* 39, 1935 (295-300). [G.]
- 631.413.41 : 631.547.2**—Joffe, J. S. Behaviour of replaceable cations in the soil and their availability. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (66-67). *Khim. Sotsial. Zemled.* No. 5, 1936 (50-59). [R.]
- 631.413.41 : 631.547.2** Kedrov-Zikhman, O. K.; Kedrova-Zikhman, O. E. Influence of absorbed cations and carbonates on the yield of crops and on the chemical composition of the soil solution. *V.L.U.L.A.*, 1936, pp. 78. [Rg.]
- 631.413.41 : 631.547.2**—Terlikowski, F.; Sozanski, S.; Kwinichidze, M. Conditions governing the uptake of Ca, Mg, Na and K from the soil absorption complex by plants. *Rocz. Nauk Roln.* 37, 1936 (20-36). [Plg.]
- 631.413.41 : 631.81**—Antipov-Karataev, I. N. The soil absorbing complex and the chemization of the soil of the northern regions of the Union. *Priroda*, 1934 (16-20). *Pedology* 1935 (901). [R.]
- 631.413.41 : 631.81**—Morgan, M. F. Changes in exchangeable bases in soils as related to fertilizer applications, leaching and crop removal. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (70-72).
- 631.413.41 : 631.81**—Murphy, H. F. The effect of fertilization on the replaceable bases in the soil. *Proc. Okla. Acad. Sci.* 15, 1935 (41-43). C.A. 29 (8205).
- 631.413.41 : 631.811**—Tiulin, A. F. Critical zones of absorbed ions and their availability for plant life. *Trans. Int. Soc. Soil Sci. Soviet Sect. 1*, 1935 (70-78). *Khim. Sotsial. Zemled.* No. 8, 1935 (7-12). [Rg.]

## FERTILIZERS AND GENERAL AGRONOMY

**631.413.41 : 631.83** --Abolina, G. I. The effect of simultaneous applications of lime and potash to podzol soils on the development of barley and the composition of the soil absorbing complex. *Khim. Sotsial. Zemled.* No. 8, 1935 (23-34). [R.g.]

**631.413.41 : 631.83** --Terlikowski, F.; Byczkowski, A.; Sozanski, S. Changes in the cation composition of the absorption complex of soils in relation to the form of potassium fertilizing. *Rocz. Nauk Roln.* 37, 1936 (9-20). [Pl.g.]

**631.413.41 : 631.841** --Nehring, K.; Möbius, H. The influence of the composition of the absorption complex of soils on the fixation and utilization of different ammonium compounds. *Ztschr. Pflanz. Düng.* 38, 1935 (294-333). [G.]

**631.413.42** --Aleshin, S. N.; Goletian, G. I. Nature of the exchange acidity of the mineral part of the soil. *Khim. Sotsial. Zemled.* Nos. 11-12, 1935 (77-84). [R.g.]

**631.413.42** --Ichikawa, C. Relations between the exchangeable acidity and the exchangeable substances in the soils. *J. Agric. Chem. Soc. Japan* 11, 1935 (817-824). C.A. 30 (1165).

**631.413.42** --Radu, I. F. The degree of saturation of soils. *Landw. VersSta* 123, 1935 (159-179). [G.]

**631.413.42** --Galinker, V. S. Interaction of lime and soil. *Trudi Inst. Agrokrom. Khim.* 2, 1936 (85-103). [U.r.e.]

**631.413.42 : 631.416.2** --Heck, A. F. Effect of the degree of base saturation of a soil on its capacity to fix phosphorus in difficultly available form. *Soil Sci.* 38, 1934 (463-470).

**631.413.42 : 631.452** --Ichikawa, C. Relations between soil fertility and exchangeable acidity. *J. Agric. Chem. Soc. Japan* 11, 1935 (190-193). C.A. 29 (5211).

**631.413.42 : 631.452** --Sedletsy, I. D. The hydrogen proton in the soil and soil degradation. *Khim. Sotsial. Zemled.* No. 5, 1935 (20-27). [R.g.]

**631.413.42 : 631.547.2** --Kirsanov, A. T. The significance to plants of the partial replacement of exchangeable bases by H followed by the introduction of Fe, and a new standard for determining the lime requirement of soils. *Trans. Int. Soc. Soil Sci. Soviet Sect. Comm.* 4, 1933 (182-198).

**631.414** --Clarens, J.; Lacroix, J. The study of soils. XV. Postulation of colloid complexes in soils. *Bull. Soc. Chim. Fr.* 2, 1935 (1431-1435). B.C.A. 54 (917). C.A. 29 (7544). [F.]

**631.414** --Csiky, J. v. The chemical character and the importance of the colloidal fraction of soil. *Ztschr. Pflanz. Düng.* 41, 1935 (165-203).

**631.414** --Krupsky, N. K. Elutation applied to the study of soil colloids. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (46-48).

**631.414** --Boutaric, A. The properties of soils examined from the point of view of colloids. *Ann. Agron.* 6, n.s., 1936 (368-395). [F.]

**631.414 : 631.416** --Davis, F. The chemical composition of the colloidal fractions from the major soils series of Alabama. *Amer. Soil Surv. Bull.* 16, 1935 (139).

**631.414 : 631.416** --Ichikawa, C. Alkali-soluble inorganic soil colloids. *J. Agric. Chem. Soc. Japan* 11, 1935 (600-603). B.C.A. 55 (949).

# BIBLIOGRAPHY OF SOIL SCIENCE

**631.414:631.416**—Wadsworth, H. A. A note on the relationship between the chemical composition of soil colloids and two of their properties. *Soil Sci.* 39, 1935 (171-176).

**631.414:631.547.1**—Borrijs, H. The cause of the soil's germination-promoting power. *Ber. Deut. Bot. Ges.* 54, 1936 (472-486). [G.]

**631.414.1**—Smith, W. O.; Foote, P. D.; Busang, P. F. Capillary rise in sands of uniform spherical grains. *Physics* 1, 1931 (18-26).

**631.414.1**—Gradmann, H. Suction force of soils. *Jahrb. Wiss. Bot.* 80, 1934 (92-111). B.C.A. 53 (1073). [G.]

**631.414.1**—Pankov, A. M. Determination of physical properties of soils with non-aqueous liquids. *Trans. Dokuchaev Inst.* 10, 1934 (5-20). C.A. 29 (5969). P.I.S. 9 (156).

**631.414.1**—Gardner, R. A method of measuring the capillary tension of soil moisture over a wide moisture range. *Soil Sci.* 43, 1937 (277-283).

**631.414.1**—Richards, S. J.; Lamb, J. Field experiments of capillary tension. *J. Amer. Soc. Agron.* 29, 1937 (772-780).

**631.414.1**—Znamensky, A. V. Determination of mean capillary radius in finely-granular media, from the coefficient of distribution of water. *Zh. Prikl. Khim.* 10, 1937 (283-286). B.C.A. 56 (593).

**631.414.1:631.411.4**—Richards, L. A.; Wilson, B. D. Capillary conductivity measurements in peat soils. *J. Amer. Soc. Agron.* 28, 1936 (427-431). C.A. 30 (5342).

**631.414.1:631.415.3**—Tittini, O. The capillary rise of solutions of electrolytes in sodium soils. *Ann. Tec. Agrar. Roma* 6, 1933, No. 5-6, pp. 11. C.A. 29 (6682). [I.]

**631.414.1:631.43**—Iovenko, N. On the negative capillary pressure in soils as connected with their physical properties and their salt regime. *Trudi Inst. Agrokult. Khim.* 1, 1936 (194-204). [U.]

**631.414.1:631.432.2**—Gardner, W. The rôle of the capillary potential in the dynamics of soil moisture. *J. Agric. Res.* 53, 1936 (57-60).

**631.414.1:631.432.3**—Mezger, R. C. The effect of capillary phenomena in soils. *Kulturtech.* 39, 1936 (66-88).

**631.414.1:631.432.3**—Richards, L. A. Capillary conductivity data for three soils. *J. Amer. Soc. Agron.* 28, 1936 (297-300).

**631.414.1:631.432.3**—Oehler, T. Experiments on the distribution of water in capillary spaces. *Proc. Int. Soc. Soil Sci.* 12, 1937 (16-17). [G.]

**631.414.1.005**—Bulychev, V. G. Determination of the height of capillary rise of water in soils of undisturbed structure. *Pedology* No. 2, 1935 (185-187). [R.]

**631.414.1.005**—Richards, L. A.; Gardner, W. Tensiometers for measuring the capillary tension of soil water. *J. Amer. Soc. Agron.* 28, 1936 (352-358).

**631.414.2**—Malandin, G. A. Soil complexes and their agricultural significance. *Sborn. Nauch. Isled. Rab. Perm S.-Kh. Inst.* 5, 1934 (1-48). *Pedology* 1936 (650).

**631.414.2**—Ansary, M. Clay and the colloidal state. *Agricultura, Louvain* 38, 1935 (197-205). B.C.A. 56 (70).

# FERTILIZERS AND GENERAL AGRONOMY

**631.414.2—Roborgh, R. H. J.** A study on the nature of clay. *Thesis, Wageningen* 1935, pp. 126. [E.]

**631.414.2 Hissink, D. J.; Hooghoudt, S. B.; Spek, J. van der.** The mineral soil complex. *Soil Res.* 5, 1936 (21–56). [G.e.]

**631.414.2—Pelišek, J.** The chemistry of lime and iron-containing concretions in the red earth of Kunstat in Moravia. *Sborn. Čsl. Akad. Zeměd.* 11, 1936 (419–426). [Cz.g.]

**631.414.2—Seki, T.** The questions of the significance of silica-sesquioxide ratio and the practical importance of acid treatments of soils. *J. Sci. Soil Japan* 10, 1936. (1–10). [J.e.]

**631.414.2—Šmolík, L.** On the iron pellets in Czechoslovakian soils. *Sborn. Čsl. Akad. Zeměd.* 11, 1936 (413–419). [Cz.g.]

**631.414.2—Tiulin, A. F.** Further development of new methods for the study of soil colloids. *Khim. Sotsial. Zemled.* Nos. 7–8, 1936 (100–106). [R.e.]

**631.414.2—Boutaric, A.; Thévenet, S.** Certain physico-chemical properties of colloidal solutions of clay. *Ann. Agron.* 7 (n.s.), 1937 (389–409). [F.]

**631.414.2—Hénin, S.** Asymmetry and orientation of clay micelles. *C.R.* 204, 1937 (1498–1499). [F.]

**631.414.2 : 535—Sideri, D. I.** On the formation of structure in soil. I. The structure of soil colloids. *Soil Sci.* 42, 1936 (381–391).

**631.414.2 : 535—Boutaric, A.; Bernard, L.** Some optical properties of colloidal solutions of clay. *Ann. Agron.* 7, n.s., 1937 (504–514). [F.]

**631.414.2 : 535.32—Hellmers, J. H.** The optical determination of the gels and gel mixtures formed during weathering. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (80–82). [G.]

**631.414.2 : 535.32—Hellmers, J. H.; Köhler, R.** The change of refractive index of mixtures of clay and silicic acid gel under the influence of water and alkali. *Ztschr. Pflanz. Düng.* 39, 1935 (38–44).

**631.414.2 : 535.32—Baren, F. A. van.** The effect of different liquids on the refractive index of clay minerals. *Ztschr. Kristallog.* 95, 1936 (464–469). [G.]

**631.414.2 : 537.531—Jacob, A.; Hofmann, O.; Loofmann, H.** The identification of soil clay by X-ray examination. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (85–88). [G.]

**631.414.2 : 537.531—Antipov-Karataev, I. N.; Borinowsky, B. K.** Chemical and X-ray investigations of colloidal fractions of some soil types. *Kolloid-Ztschr.* 75, 1936 (325–337). [G.]

**631.414.2 : 537.531—Marshall, C. E.** The colloidal properties of the clays as related to their crystal structure. *J. Phys. Chem.* 41, 1937 (935–942).

**631.414.2 : 539.214—Utescher, K.** The application of soil science viewpoints to the evaluation of plastic clays. *Ztschr. Deut. Geol. Ges.* 42, 1934 (57–64). C. A. 28 (7396).

**631.414.2 : 541.18.04—Tendeloo, H. J. C.** The origin of bands of precipitation in soil. *Landbouwk. Tijdschr.* 45, 1933 (326). Z. P. D. 36A (114). [Du.]

**631.414.2 : 541.18.04—Bray, R. H.** The origin of horizons in claypan soils. *Amer. Soil Surv. Bull.* 16, 1935 (70–73).

**631.414.2 : 541.18.04—Briloux, C.; Jouis, E.** The action of lime and magnesia on clay and humus colloids. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (19–20). [F.]

# BIBLIOGRAPHY OF SOIL SCIENCE.

- 631.414.2 : 541.18.04**—Jenny, H.; Smith, G. D. Colloid chemical aspects of clay pan formation in soil profiles. *Soil Sci.* 39, 1935 (377-389).
- 631.414.2 : 541.18.04** Setter, L. R.; Mattson, S. Coagulation of soil suspensions by aluminum and iron salts. *J. Indust. Engng. Chem.* 27, 1935 (94-97).
- 631.414.2 : 541.18.04** Belousov, A. M.; Belousova, A. G.; Khokhlova, O. M. Sedimentation of the suspension of a loess-like material in relation to the electrical conductivity of the liquid phase. *Trans. Int. Soc. Soil Sci. Soviet Sect.* Vol. 5, 1936 (554-566). R.
- 631.414.2 : 541.18.04 : 631.86** Anne, P. Organic manures, the calcium status and clay dispersion in soils. *Ann. Agron.* 5, n.s., 1935 (781-785). F.
- 631.414.2 : 541.18.05** Wilson, H.; Page, G. A. Simple dispersion test for clays. *J. Amer. Ceram. Soc.* 16, 1933 (82-85). B.C.A., 52 (268).
- 631.414.2 : 541.18.05** Pankov, A. M. Dispersion of soil and subsoil under different conditions. *Trans. Dokuchayev Inst.* 10, No. 6, 1934, P.I.S. 9 (159).
- 631.414.2 : 541.18.05** Pozdena, L. Investigations of the dispersing effect of sodium ions on soils. *Ztsch. Pflanz. Dung.* 36A, 1934 (99-104). G.
- 631.414.2 : 541.18.05** Sushko, S. Y.; Sushko, E. S. The influence of exchangeable magnesium on the dispersion properties of soils. *Gel'tsoz. Sci. Inst. Fert.* No. 34, 1934 (5-13). C.A. 28 (7403).
- 631.414.2 : 541.18.05 : 631.432.2** Pronin, M.E. The effect of dispersion along the soil profile under different conditions of cultivation. V. The effect of soil moisture together with different fertilizers on the dispersion value. *Shorn. Rab. S.-Kavkaz. Zern. Inst.* 1933 (146-158). *Pedology* 1935 (899). R.
- 631.414.2 : 541.18.05 : 631.81** Pronin, M. E. The coefficient of dispersion along the soil profile under different conditions of cultivation. IV. The effect of different fertilizers. *Shorn. Rab. S.-Kavkaz. Zern. Inst.* 1933 (125-145). *Pedology* 1935 (899). R.
- 631.414.2 : 541.182.025** Rabinerson, A. I. The thixotropy of soil colloids and suspensions and its significance for structural studies. *Khim. Sotsial. Zemled.* 1934 (75-81). *Pedology* 1935 (905). R.
- 631.414.2 : 541.182.025** Russell, J. L. Studies on thixotropic gelation. II. The coagulation of clay suspensions. *Proc. Roy. Soc. London* 154A, 1936 (550-560).
- 631.414.2 : 541.182.025**—Russell, J. L.; Rideal, E. K. Studies in thixotropic gelation. I. The mechanism of thixotropic gelation. *Proc. Roy. Soc. London* 154A, 1936 (540-549).
- 631.414.2 : 541.182.025** Aristova, Z. I.; Rabinerson, A. I. Thixotropy of soil suspensions and colloids. *Trudy LOMTUA* 1 No. 38, 1935 (73-81). *Pedology* 1937 (278).
- 631.414.2 : 541.182.025**—Kovalevskaya, N. P. The influence of different electrolytes on structure formation in krasnozem suspensions. *Pedology* No. 4, 1937 (505-512). R.
- 631.414.2 : 549** Byers, H. G. Chemical composition of the colloids of the great soil groups. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (76-79).

## FERTILIZERS AND GENERAL AGRONOMY

**631.414.2:549—Drosdoff, M.** The separation and identification of the mineral constituents of colloidal clays. *Soil Sci.* 39, 1935 (463-478).

**631.414.2:549—Marshall, C. E.** The importance of the lattice structure of the clays for the study of soils. *J. Soc. Chem. Indust.* 54, 1935 (393T-398T).

**631.414.2:549—Marshall, C. E.** Mineralogical methods for the study of silts and clays. *Ztschr. Kristallög.* 90, 1935 (8-34).

**631.414.2:549—Marshall, C. E.** Some properties of clay fractions. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (88-90).

**631.414.2:549—Truog, E.; Drosdoff, M.** Determination of the mineral content of soil colloids. *Amer. Soil Surv. Bull.* 16, 1935 (136-138).

**631.414.2:549—Abel, A.; Utescher, K.** Comparative investigations on the determination of "clay substance" in kaolins, clays and soils, with particular reference to the Kallauner-Matejka method. *Ztschr. Pflanz. Düng.* 42, 1936 (277-303).

**631.414.2:549—Kawamura, K.; Funabiki, S.** The soil colloids of middle and western Japan. IV. The Röntgen analysis of the colloids. *J. Sci. Soil Japan* 10, 1936 (281-294). C.A. 31 (1139).

**631.414.2:549—Kelley, W. P.** The evidence as to the crystallicity of soil colloids. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (88-91).

**631.414.2:549—Kelley, W. P.; Jenny, H.; Brown, S. M.** Hydration of minerals and soil colloids in relation to crystal structure. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (84-87).

**631.414.2:549—Marshall, C. E.** The chemical composition and crystal structure of clay minerals. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (95-97).

**631.414.2:549—Marshall, C. E.** The constitution of the clay minerals. *Sci. Prog.* No. 119, 1936 (422-433).

**631.414.2:549—Edelman, C. H.** Modern views regarding clay minerals. *Landbouwk. Tijdschr.* 49, 1937, pp. 20.

**631.414.2:549—Salminen, A.** Composition of clays as shown by density measurements. *Suomen Kem.* 10A, 1937 (3-6). B.C.A. 56 (476).

**631.414.2:549.67—Winterkorn, H. F.** Studies on the surface behaviour of bentonites and clays. *Soil Sci.* 41, 1936 (25-32).

**631.414.2:55—Keller, W. D.** Clay colloids as a cause of bedding in sedimentary rocks. *J. Geol.* 44, 1936 (52-59).

**631.414.2:551.58—Jenny, H.** The clay content of the soil as related to climatic factors, particularly temperature. *Soil Sci.* 40, 1935 (111-128).

**631.414.2:581.144.2—Fitzpatrick, E. G.; Rose, L. E.** A study of root distribution in prairie claypan and associated friable soils. *Amer. Soil Surv. Bull.* 17, 1936 (136-145).

**631.414.2:631.413—Mukerjee, J. N.** The affinity of the soil colloids for cations and anions. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (90-92).

**631.414.2:631.413—Schofield, R. K.** The interpenetration of the diffuse double layers surrounding soil particles. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (30-33).



# BIBLIOGRAPHY OF SOIL SCIENCE

**631.414.2:631.413.4—Sedletsy, I. D.** The crystalline structure of soil colloids and new data on the exchange of cations and anions in soils. *Khim. Sotsial. Zemled.* No. 12, 1934 (67-77). C.A. 30 (798).

**631.414.2:631.413.4—Slater, C. S.; Byers, H. G.** Base exchange and related properties of the colloids of soils from the erosion experiment stations. *U.S.D.A. Tech. Bull.* 461, 1934, pp. 19.

**631.414.2:631.413.4—Fraps, G. S.; Fudge, J. F.** Decomposition of the base-exchange compounds of soils by acids and its relation to the quantity of alumina and silica dissolved. *J. Amer. Soc. Agron.* 27, 1935 (446-455).

**631.414.2:631.413.4—Hissink, D. J.; Spek, J. van der; Hooghoudt, S. B.** A study of the adsorption complex of mineral soils. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (82-84).

**631.414.2:631.413.4—Okhotin, V. V.; Demidov, V. L.** Physical properties of clays in relation to the degree of dispersion and saturating bases. *Physico-Mechanical Properties of Subsoils, Cent. Inst. Roads and Machines, Leningrad*, 1935 (3-23). R.

**631.414.2:631.413.4—Harden, H. J.** The dependence of adsorption capacity on soil type. *Handel. 7th Ned.-Ind. Natuurwetenschappelijk Congres*, 1936 (601-612). Du.c.

**631.414.2:631.413.4—Mitchell, R. L.; Muir, A.** Base exchange capacity and clay content of soils. *Nature* 139, 1937 (552-553).

**631.414.2:631.418—Chaminade, L.** Study of the equilibrium between the absorbing complex and soil solutions. *Ann. Agron.* 4, n.s., 1934 (781-792). F.

**631.414.2:631.43—Pankov, A. M.** The soil absorbing complex and physical properties of soils. *Trans. Dokuchaev Inst.* 9, 1934 (237-245). *Pedology*, 1935 (899). R.

**631.414.2:631.43—Behrens, W. U.** Relations between surface, hygroscopicity and heat of wetting of soil. *Ztschr. Pflanz. Düng.* 40, 1935 (257-310). G.

**631.414.2:631.43—Patty, R. L.** The relation of colloids in soil to its favourable use in pisé or rammed earth walls. *S. Dak. Agric. Expt. Sta. Bull.* 298, 1936, pp. 23.

**631.414.2:631.431—Pokrovsky, G. I.** Nature of swelling forces of clays. *Pedology* No. 2, 1936 (293-295). R.

**631.414.2:631.432.3—Ravikovitch, S.** The movement of colloidal clay in red sandy soils—a factor interfering with normal soil properties. *Hadar* 7, 1934 (246-251, 272-275). C.A. 29 (3442).

**631.414.2:631.437.2—Cooper, H. P.; Paden, W. R.** The intensity of removal of added cations from soil colloids by electro-dialysis. *J. Amer. Soc. Agron.* 28, 1936, No. 8 (597-608).

**631.414.2:631.44—Albareda, J. M.** The chemical composition of some tropical and south-east Spanish clays. *Rev. Acad. Madrid*, 32, 1935 (50-55). C.A. 29 (7552).

**631.414.2:631.44—Bradfield, R.** The bearing of recent investigations in soil colloids on soil classification. *Trans. 3rd Int. Cong. Soil Sci.* 2, 1935 (134-143).

**631.414.2:631.44—Laatsch, W.** The grouping of German soil types having free drainage from the standpoint of the soil complex. *Ztschr. Pflanz. Düng.* 38, 1935 (193-207). G.

## FERTILIZERS AND GENERAL AGRONOMY

**631.414.2 : 631.44**—Anderson, M. S. ; Byers, H. G. Neutralization curves of the colloids of soils representative of the great soil groups. *U.S.D.A. Tech. Bull.* 542, 1936, pp. 38.

**631.414.2 : 631.44**—Thomas, W. Properties of the hydroxyl groups of clay as a basis for characterizing a mineral soil. *Soil Sci.* 42, 1936 (243-259).

**631.414.2 : 631.445**—Byers, H. G. Chemical composition of the colloids of the great soil groups. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (76-79).

**631.414.2 : 631.445** Byers, H. G. ; Alexander, L. T. ; Holmes, R. S. The composition and constitution of the colloids of certain of the great groups of soils. *U.S.D.A. Tech. Bull.* 484, 1935, pp. 38.

**631.414.2 : 631.48**—Mattson, S. ; Hester, J. B. The laws of soil colloidal behaviour : XV. The degradation and the regeneration of the soil complex. *Soil Sci.* 39, 1935 (75-84).

**631.414.2 : 631.48**—Demolon, A. ; Bastisse, E. The genesis of clay colloids in the spontaneous alteration of a granite in lysimeter boxes. *C.R.* 203, 1936 (736-738). [F.]

**631.414.2 : 631.48**—Bray, R. H. Chemical and physical changes in soil colloids with advancing development in Illinois. *Soil Sci.* 43, 1937 (1-14).

**631.414.2 : 631.483** Bray, R. H. The significance of the weathering loss of K and Mg in soil colloids extracted from Illinois soil. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (153-159).

**631.414.2 : 631.483**—Brown, I. C. ; Byers, H. G. Variation of the soil colloids formed from similar parent material. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (171-173).

**631.414.2 : 631.51** Ryzhov, S. N. ; Tikhonova, Y. G. The reasons for the compacting of the subsoil layer and the effect of this compacting upon the water conditions of the soil. *Bull. SoituzNIKhI*, No. 7, 1935 (105-123). [R.]

**631.414.2 : 631.811**—Taranovskaia, V. G. The theories of the soil-absorbing complex from the agronomic viewpoint as a current problem in the chemization of socialistic agriculture in the sub-tropics. *Khim. Sotsial. Zemled.* No. 12, 1934 (36-48). C.A. 30 (797).

**631.414.2 : 631.811** Hutchings, T. B. Relation of phosphorus to growth, nodulation and composition of soybeans. *Missouri Agric. Expt. Sta. Res. Bull.* 243, 1936, pp. 46.

**631.414.2 (083.72)**—Nostitz, A. von. Kaolin, clay, loam. *Ztschr. Pflanz. Dung.* 38, 1935 (208-213). [G.]

**631.414.2 (083.72)**—Clarens, J. ; Lacroix, J. Soils. XVII. "Clay" in the agronomic sense. *Bull. Soc. Chim. Fr.* 3, 1936 (2057-2063). B.C.A. 56 (70).

**631.414.3 : 539.211**—Znamensky, A. V. Determination by the adsorption method of the mean specific surface of finely granular powders. *Zh. Prikl. Khim.* 9, 1936 (208-216). B.C.A. 55 (610).

**631.414.3 : 541.132**—Gapon, E. N. Adsorption of cations and anions by soil ampholytoids. *Trudy Gdoviz Inst. Udob. Leningr. Lab.* 2, 1933 (120-133). C.A. 29 (1918). [R.]

**631.414.3 : 541.132**—Antipov-Karataev, I. N. ; Vishniakov, A. P. ; Sochevanov, W. G. The fixation of anions and calcium by soils and their components at different pH values. *Trans. Int. Soc. Soil Sci. Soviet Sect. 2nd Comm.* A1, 1934 (73-111). [G.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.414.3 : 541.132**—Ravikovitch, S. Anion exchange: 11. Liberation of the phosphoric acid ions adsorbed by soils. *Soil Sci.* 38, 1934 (279-290).
- 631.414.3 : 541.132**—Remesov, N. P.; Vlasova, M. M. Some data on the absorption of anions by the soil. *Pedology* No. 2, 1934 (202-214). [R.]
- 631.414.3 : 541.132**—Sedletsy, I. D. The crystalline structure of soil colloids and new data on the exchange of cations and anions in soils. *Khim. Sotsial. Zemled.* No. 12, 1934 (67-77). C.A. 30 (798).
- 631.414.3 : 541.132**—Antipov-Karataev, I. N.; Ponomareva, G. I.; Astaf'ev, N. B. Adsorption and desorption of potash and phosphate ions by soils. *Trudy Gedroiz Inst. Udob. Leningr. Lab.* (82-109). [R.]
- 631.414.3 : 541.132**—Marel, H. W. van der. A study on the cation and anion adsorption of tropical and Dutch soils. *Thesis Wageningen* 21 Feb. 1935, pp. 150. [Dut.]
- 631.414.3 : 541.132**—Polynov, B. B.; Troitsky, A. I. Exchange of adsorbed anions in red soils of Adjarra. *C.R. Acad. Sci. (U.S.S.R.)* 4, 1935 (70-71). [R.]
- 631.414.3 : 541.132**—Aleshin, S. N.; Igritskaya, E. B.; Nestiuk, N. N. Adsorption of anions and availability of adsorbed phosphates to plants. *Khim. Sotsial. Zemled.* No. 4, 1936 (30-38). [R.]
- 631.414.3 : 541.132**—Toth, S. J. Anion adsorption by soil colloids in relation to changes in free iron oxides. *Soil Sci.* 44, 1937 (299-314).
- 631.414.3 : 546.27**—Bobko, E. V.; Matveeva, T. V.; Dubachova, T. D., et al. Investigations on the absorption of boron by soils. *Ann. Agron.* 6, n.s., 1936 (691-701). [F.]
- 631.414.3 : 546.47**—Jones, H. W.; Gall, O. E.; Barnette, R. M. The reaction of zinc sulphate with the soil. *Fla. Agric. Expt. Sta. Bull.* 298, 1936, pp. 42.
- 631.414.3 : 553.97**—Musierowicz, A. The absorption of  $\text{PO}_4$  anions in peats. *Trans. 6th Comm. Int. Soc. Soil Sci. Zurich* (34-35). [G.]
- 631.414.3 : 553.97**—Wilson, B. D.; Staker, E. V. Retention of manurial constituents by peat. *Trans. 6th Comm. Int. Soc. Soil Sci. Zurich*, 1937 (36). [E.]
- 631.414.3 : 631.412**—Wiessmann, H.; Neumann, W. Absorption of gases by soil constituents and soils. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (51-53). [G.]
- 631.414.3 : 631.413.41**—Russell, E. W. The adsorption of liquids by clays. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (48-50).
- 631.414.3 : 631.417.2**—Shibuya, K.; Saeki, H. Sorption of gases in the soil. *J. Sci. Soil Japan* 9, 1935 (117-126). C.A. 29 (5971).
- 631.414.3 : 631.44**—Chigarev, G. A. Sorption of ammonia vapour by soils. *Trudy Gedroiz Inst. Udob. Leningr. Lab.* No. 36, 1935 (174-181). [R.]
- 631.414.3 : 631.547.2**—Scharrer, K.; Schropp, W. The effect of different adsorbents on plant growth. *Lund. VersSta.* 122, 1935 (322-338). [G.]
- 631.414.33**—Bouyoucos, G. J. A comparison between the suction method and the centrifuge method for determining the moisture equivalent of soils. *Soil Sci.* 40, 1935 (165-170).

## FERTILIZERS AND GENERAL AGRONOMY

**631.414.33—Bouyoucos, G. J.** The dilatometer method for determining the moisture equivalent of soils. *Soil Sci.* 43, 1937 (385-389).

**631.414.33 : 631.44—Taylor, J. K.** The use of moisture equivalent as an index of texture for soil survey purposes. *J. Aust. Inst. Agric. Sci.* 2, 1936 (171-172).

### 631.415 SOIL REACTION

**631.415.1—Arena, A.** The hydrogen-ion concentration of the soil, its origin, variation and effect on crops. *Rev. Cent. Estud. Agron. B. Aires*, No. 147, 1933, pp. 133. [Sp.]

**631.415.1 Mukherjee, J. ; Roychoudhury, S., et al.** On the nature of reactions responsible for soil acidity. Part III. *Indian J. Agric. Sci.* 4, 1934 (733-757).

**631.415.1 Davies, W. M.** Soil acidity from the advisory point of view. *Agric. Prog.* 13, 1936 (98-104).

**631.415.1 Rolet, A.** The new conceptions on the reaction of cultivated soils. The pH. *Rev. Gén. Sci.* 46, 1935 (313-315). C. A. 29 (6681). [F.]

**631.415.1 Chaminade, R.** The pH of soils. *Bull. Assoc. Chim. Sucr.* 53 Ann. 1936 (905-911). [F.e.g.]

**631.415.1 Hance, F. E. ; Davis, L. E.** Soil reaction and total acidity. *Hawaii Plant. Rec.* 40, 1936 (319-327).

**631.415.1 Mitra, R.** On the nature of reactions responsible for soil acidity. Part V. Titration curves of clay acids. *Indian J. Agric. Sci.* 6, 1936 (554-577).

**631.415.1 Mukherjee, J. ; Mitra, R., et al.** On the nature of reactions responsible for soil acidity. Pt. IV. Interpretation of titration curves. *Indian J. Agric. Sci.* 6, 1936 (517-554).

**631.415.1 : 525.5 Fehér, D. ; Kiszely, Z.** Experiments on seasonal variations in soil acidity. *Arch. Pflanzbau* 9, 1932 (172-196). *Biol. Abs.* 10 (714).

**631.415.1 : 525.5 Nehring, K.** The fluctuations of reaction in soil. *Ztschr. Pflanz. Düng.* 36A, 1934 (257-270). [G.]

**631.415.1 : 525.5 Bruin, P.** Seasonal variations in the pH of soil. *Chem. Weekbl.* 32, 1935 (218-224). C. A. 29 (5966). [G.]

**631.415.1 : 525.5 Fehér, D.** Some remarks on the fluctuations of reaction in the soil. *Ztschr. Pflanz. Düng.* 37, 1935 (312-314). [G.]

**631.415.1 : 525.5 Nehring, K.** Fluctuations of reaction in soil. *Ztschr. Pflanz. Düng.* 40, 1935 (137-141). [G.]

**631.415.1 : 525.5 Fehér, D.** Fluctuations of reaction in soil. *Ztschr. Pflanz. Düng.* 42, 1936 (257-262). [G.]

**631.415.1 : 541.134.5—Heintze, S. G.** Soil oxidation-reduction potentials and pH values. *Soil Res.* 4, 1935 (351-355).

**631.415.1 : 541.134.5 Darnell, M. C. ; Eisenmenger, W. S.** Oxidation-reduction potentials of soil suspensions in relation to acidity and nitrification. *J. Agric. Res.* 53, 1936 (73-80).

**631.415.1 : 545.371/2 Tommasi, G. ; Marimpietri, L.** Determination of pH in soils. *Ann. Sper. Agrar. Roma* 16, 1934 (7-35). [I.]

**631.415.1 : 545.371/2 Snyder, E. F.** Methods for determining the hydrogen-ion concentration of soils. *U.S.D.A. Circ.* 56, 1935, pp. 47.

# BIBLIOGRAPHY OF SOIL SCIENCE

**631.415.1 : 545.371/2—Karsten, A.** The application of new advances in pH determination in soil research. *Bied. Zbl.* 6, 1936 (333-338). [G.]

**631.415.1 : 545.371—Gössl, V.** Colorimetric methods for determining soil reaction in agriculture or forestry. *Sborn. Masaryk Akad. Práce* 8, 1934 (1-29). B.C.A. 54 (646).

**631.415.1 : 545.371—Neugebauer, V. K.** Influence of filtration on the colorimetrically determined pH of soil extracts. *Bull. Soc. Chim. Yougoslav.* 5, 1934 (73-82). B.C.A. 54 (324).

**631.415.1 : 545.371—Gaspard, E.** Measurement of soil reaction in agricultural practice. *Cong. Int. Tech. Chim. Indust. Agric. 4th Cong. Brussels; Inst. Belge Amelior. Better. Pub.* 6, 1935 (406). [F.]

**631.415.1 : 545.371—Moore, W.** An improved method for the determination of the soil reaction. *J. Bd. Greenk. Res.* 4, 1935 (134-138).

**631.415.1 : 545.371—Yamada, S.** A new simple apparatus for determining soil reaction. *Hokkaido Agric. Expt. Sta. Rept.* No. 34, 1935 (1-41). [J.]

**631.415.1 : 545.371—Raymond, L. W.** The thiocyanate test for soil reaction. A modified technique, and a method of recording results. *J. Soc. Chem. Indust.* 55, 1936 (138T-139T).

**631.415.1 : 545.371—Wilcox, J. C.** Some factors involved in the colorimetric determination of the pH of soils. *Sci. Agric.* 16, 1936 (225-232).

**631.415.1 : 545.372—Puri, A. N.** The use of the antimony electrode for determining soil reaction. *Punjab Irrig. Res. Inst. Mem.* 4, No. 4, 1932, pp. 11. C.A. 29 (5570).

**631.415.1 : 545.372—Dean, H. L.; Walker, R. H.** A comparison of different types of glass electrodes for determining the pH of soils. *Proc. Iowa Acad. Sci.* 41, 1934 (127-132). C.A. 29 (3444).

**631.415.1 : 545.372—Haugaard, G.** The applicability of the glass electrode to pH measurements in biological fluids. *Biochem. Ztschr.* 274, 1934 (231-252). *Bied. Zbl.* 6 (301).

**631.415.1 : 545.372—Dean, H. L.; Walker, R. H.** A comparison of glass and quinhydrone electrodes for determining the pH of some Iowa soils: I. A comparison of different types of glass electrodes. *J. Amer. Soc. Agron.* 27, 1935 (429-436).

**631.415.1 : 545.372—Dean, H. L.; Walker, R. H.** A comparison of glass and quinhydrone electrodes for determining the pH of some Iowa soils: II. The variability of results. *J. Amer. Soc. Agron.* 27, 1935 (519-525).

**631.415.1 : 545.372—Dean, H. L.; Walker, R. H.** A comparison of glass and quinhydrone electrodes for determining the pH of some Iowa soils: III. The change in pH of the soil-water mixture with time. *J. Amer. Soc. Agron.* 27, 1935 (585-595).

**631.415.1 : 545.372—Dean, H. L.; Walker, R. H.** A comparison of glass and quinhydrone electrodes for determining the pH of some Iowa soils. *Proc. Iowa Acad. Sci.* 42, 1935 (105-106). C.A. 30 (8469).

**631.415.1 : 545.372—Gleria, J. di.** The utility of different electrodes in the electrometric determination of the pH of soils. *Mezög. Kulat.* 8, 1935 (38-44). [H.g.]

# FERTILIZERS AND GENERAL AGRONOMY

**631.415.1 : 545.372**—Hissink, D. J.; Crowther, E. M.; Heintze, S. G. Report of the soil reaction committee on the investigation of the glass electrode method. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (127-132).

**631.415.1 : 545.372**—Jensen, S. T.; Darmsgaard-Sørensen, P. The use of the glass electrode in measuring soil reaction. *Tidsskr. Planteavl* 40, 1935 (687-708). [Da.]

**631.415.1 : 545.372**—Spek, J. van der. The glass electrode and the determination of soil acidity. *Versl. Bodenk. Inst. Groningen* 41B, 1935 (575-587). [Du.]

**631.415.1 : 545.372**—Demortier, G. A special device for electrometric titration by the quinhydrone method. *Bull. Inst. Agron. Gembloux* 5, 1936 (325-326). [F.d.u.g.e.]

**631.415.1 : 545.372**—Heukeshoven, W. pH determination in soils, using the centrifuge. *Angew. Chem.* 49, 1936 (742-743). B.C.A. 55 (1170). [G.]

**631.415.1 : 545.372**—Itano, A.; Tsuji, Y. Direct pH determination of soil under its natural state by quinhydrone method. II. Description of a new electrode and its use. *Ber. Ohara Inst.* 7, 1936 (214-225). [E.]

**631.415.1 : 545.372**—Morgan, M. F. Report on hydrogen-ion concentration of acid soils. Studies of soil reaction methods by the International Society of Soil Science. *J. Assoc. Off. Agric. Chem.* 19, 1936 (262-263). C.A. 30 (4965).

**631.415.1 : 545.372**—Pfeil, E. Measurements with the glass electrode. *Angew. Chem.* 49, 1936 (57-59). C.A. 30 (1919). [G.]

**631.415.1 : 545.372**—Riehm, H. A potentiometer for routine work. *Ztschr. Pflanz. Düng.* 44, 1936 (84-94). [G.]

**631.415.1 : 545.372**—Robertson, I. M. An agar and potassium chloride bridge for use with calomel half cells. *Analyst* 61, 1936 (687-688). C.A. 31 (198).

**631.415.1 : 545.372**—Schollenberger, C. J. A practical antimony electrode for soil pH determination. *Soil Sci.* 41, 1936 (123-129).

**631.415.1 : 545.372**—Cameron, A. E. A sensitive glass electrode of durable form. *Indust. Engng. Chem. Anal. Ed.* 9, 1937 (436).

**631.415.1 : 545.372**—Gardiner, W. C.; Sanders, H. L. Errors of the glass electrode. *Indust. Engng. Chem. Anal. Ed.* 9, 1937 (274-278).

**631.415.1 : 545.372**—Haugaard, G. Mechanism of the glass electrode. *Nature* 140, 1937 (66).

**631.415.1 : 545.372**—Klockmann, R. pH measurements in soils. *Ztschr. Anal. Chem.* 109, 1937 (76-79).

**631.415.1 : 545.372**—McGeorge, W. T. The determination of soil reaction under field conditions by means of the spear-type glass electrode. *J. Amer. Soc. Agron.* 29, 1937 (841-844).

**631.415.1 : 545.372**—McGeorge, W. T. Report on hydrogen-ion concentration of alkaline soils. *J. Assoc. Off. Agric. Chem.* 20, 1937 (220-221). C.A. 31 (5081).

**631.415.1 : 545.372**—Mouquin, H.; Garman, R. L. Low-resistance glass electrodes. *Indust. Engng. Chem. Anal. Ed.* 9, 1937 (287).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.415.1 : 545.372** —Riddle, A. R. A note on electrodes for measurement of pH. *Aust. J. Coun. Sci. Indust. Res.* 10, 1937 (45-46).
- 631.415.1 : 545.372 : 631.415.3** —McGeorge, W. T. Measurement and significance of hydroxyl-ion concentration in alkaline-calcareous soils. *Ariz. Agric. Expt. Sta. Tech. Bull.* 57, 1935 (239-271). C.A. 29 (8199)
- 631.415.1 : 545.372 : 631.415.3** —Hibbard, P. L. Report on hydrogen-ion concentration of alkaline soils. *J. Assoc. Off. Agric. Chem.* 19, 1936 (256-262). C.A. 30 (4965)
- 631.415.1 : 545.372 : 631.416.871.1** —Gisiger, L. The Mn-content of soils and its effect on pH-estimation with the quinhydrone electrode. *Lands. Jährb. Schweiz* No. 7, 1935 (735-748). G.C.
- 631.415.1 : 546.22** —Fraps, G. S.; Fudge, J. F. The effect of sulfur and sulfuric acid upon the development of soil acidity at different depths. *J. Amer. Soc. Agron.* 28, 1936 (1012-1016).
- 631.415.1 : 581.144.2** —Solberg, P. Investigations of the root secretions of different plants cultivated with and without nutrient salts. *Lands. Jährb.* 81, 1935 (891-917). G.
- 631.415.1 : 581.5** —Wlodek, J.; Ralski, E.; Wodzicka, M. Soils bearing lime plants in granitic areas. *Bull. Int. Acad. Polon.* 1933 (195-211). B.C.A. 54 (116). C.A. 29 (5211)
- 631.415.1 : 581.5** —Emmett, H. E.; Ashby, E. Some observations on the relation between the hydrogen-ion concentration of the soil and plant distribution. *Ann. Bot.* 48, 1934 (869-876). C.A. 29 (1190)
- 631.415.1 : 581.5** —Ulehla, V.; Martinec, T. Soil reactivity as a general expression of ecological factors studied with new methods. I. The buffering and "clamping" power as two components of soil reactivity in reciprocal and temporary relationships. II. Soil buffering in acid media. III. "Soil clamping" in acid media studied by means of static and derived curves. *Strojn. Čas. Dvad. Zeml.* 12, 1937 (100-115, 156-173, 173-189). Cz.
- 631.415.1 : 631.416** —Conrad, J. P. Acidity and alkalinity produced by changes in the nitrogen, sulphur, and carbon cycles. *Plant Physiol.* 8, 1933 (509-524).
- 631.415.1 : 631.416** —Hester, J. B. The effect of soil type, soil acidity, and organic matter on the growth of beets, the solubility of aluminum, and the availability of plant nutrients. *Proc. Amer. Soc. Hort. Sci.* 30, 1933 (460-464). E.S.R. 72 (184)
- 631.415.1 : 631.416** —Pettinger, N. A. Soil reaction and plant availability. *Va. Agric. Expt. Sta. Ext. Bull.* 136 in *Ext. Rec.* 10, 1935 (6-7).
- 631.415.1 : 631.416.11** —Vasquez, N. F. Relation between the ammonia content and reaction of soils. *Bol. Soc. Quim. Peru* 1, 1935 (47-57). B.C.A. 54 (687)
- 631.415.1 : 631.416.7** —Kühn, S. Note on the relation between lime content and pH values of soils. *Soil Sci.* 39, 1935 (167-169).
- 631.415.1 : 631.416.862.1** —Osugi, S.; Nishigaki, H. Micro-determination of alumina: distribution of water-soluble alumina in tea-garden soil of Uji district, Kyoto, Japan. *J. Sci. Soil Japan* 9, 1935 (149-158).
- 631.415.1 : 631.427.3** —Gisiger, L. Influence of soil reaction on the solubility of nutrients by the Neubauer and Dirks methods. *Zuckerrubenhaut* 14, 1934 (132-140). C.A. 28 (7394). G.C.]

# FERTILIZERS AND GENERAL AGRONOMY

**631.415.1 : 631.432.2** Deines, G. ; Kurbis, P. Acidity values. *Ztschr. Pflanz. Düng.* 40, 1935 (141-148). G.

**631.415.1 : 631.432.2** Fehér, D. The effect of moisture content on the pH value. *Ztschr. Pflanz. Düng.* 44, 1936 (341-346). [G.]

**631.415.1 : 631.547.2** Priianishnikov, D. N. The influence of soil reaction on plant growth. *Proc. 2nd Int. Cong. Soil Sci.* 7, 1933 (49-56). G.

**631.415.1 : 631.547.2** Chadwick, L. C. Soil acidity and plant growth. *Proc. Nat. Shade Tree Conf.* 10, 1934 (14-26). E.S.R. 73 (44).

**631.415.1 : 631.547.2** Peterburgsky, A. V. Soil reaction as a factor in plant growth. *Trudy TSISN* No. 18, 1934 (223-283). B.C.A. 56 (377). R.

**631.415.1 : 631.547.2** Solberg, P. The importance of some soil factors in the effect of hydrogen ion concentration on plant growth. *Rept. 3rd Grassland Conf. Zurich* 1934 (117-126). *Herb. Abs.* 5 (20). G.

**631.415.1 : 631.547.2** Solberg, P. The significance of the properties of different soil types as regards the effect of reaction on the growth of different crops. *Meld. Norske Myndsk.* 32, 1934 (16). Z.P.D. 44 (180).

**631.415.1 : 631.547.2** Hendrick, J. ; Moore, W. Soil reaction and plant growth. *Trans. Highl. Agric. Soc. Scot.* 47 (5th ser.), 1935 (34-49).

**631.415.1 : 631.547.2** Kawashima, R. The effect of reaction and lime content of soil on the growth of crops. IX. Green manure crops. *J. Sci. Soil Japan* 11, 1937 (163-170). J.e.

**631.415.1 : 631.811.4** Hardy, F. Simple graphs for calculating lime requirements. *Proc. Sug. Can. Investg. Cttee. Trin.* 4, 1932 (58-61). C.A. 29 (1920).

**631.415.1 : 631.811.4** Mautner, S. Studies on soil acidity. *Ztschr. Pflanz. Düng.* 34A, 1934 (209-217). G.

**631.415.1 : 631.811.4** Mevius, W. Investigations on the relation between the life of higher plants and soil acidity. *Deut. Forsch.* 23, 1934 (230). Z.P.D. 40 (363). G.

**631.415.1 : 631.811.9** Mevius, W. ; Engel, H. Soil acidity and plant growth. *Deut. Forsch.* 23, 1934 (230-246). C.A. 31 (2728). G.

**631.415.1 : 631.813** Askinasi, D. The character of soil acidity. *Khim. Sotsial. Zoolid.* 2, 1934 (45). Z.P.D. 41 (238). R.

**631.415.1 : 631.813** Clevenger, C. B. ; Willis, L. G. Immediate effects of fertilization upon soil reaction. *J. Amer. Soc. Agron.* 27, 1935 (833-846).

**631.415.1 : 631.813** Hughes, A. E. ; Bahrt, G. M. Acid and base-forming fertilizers and their influence on the reaction of some Florida soils. *Proc. Fla. Hort. Soc.* 1935 (16-24). C.A. 30 (3147).

**631.415.1 : 631.813** Radu, I. F. The influence of some fertilizers on the reaction of the soil. *Landw. VersSta.* 123, 1935 (181-203). G.

**631.415.1 : 631.813** Ruprecht, R. W. ; Bell, C. E. The effect of acid and non-acid fertilizers on Norfolk fine sand. *Proc. Fla. Hort. Soc.* 1935 (39-42).

**631.415.1 : 631.813** Willis, L. G. ; Piland, J. R. The influence of fertilizer constituents and leaching on the acidity of soil-fertilizer mixtures. *Proc. First Ann. Meetg. Cttee. Fert. Amer. Soc. Agron.* 1935 (33-37). C.A. 30 (4971).



# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.415.1 : 631.821.1**—Kristensen, M. K.; Jensen, S. Torg-  
borg-; Nielsen, N. C. Soil reaction. *Jord. Grundförelæring*.  
Suppl. Ser. 4, No. 3, 1932, pp. 59. B.C.A. 54 (965).
- 631.415.1 : 631.821.1**—Aarnio, B. The effect of lime on soil  
reaction and the fluctuations of reaction during the plant growth  
period. *Maat. Aikak.* 7, 1935 (153-170). *Agrogeol. Julk. Finland*  
41, 1935, pp. 20. [G.n.]
- 631.415.1 : 631.821.1**—Bamberg, K. Soil reaction and liming.  
*Lauskaun. Mäenr.* No. 1-5, 1935. P.I.S. 10 (165).
- 631.415.1 : 631.821.1**—Walker, R. H.; Brown, P. E. The  
effects of lime on the hydrogen-ion concentration and base exchange  
complex of Grundy silt loam. *Iowa Agric. Expt. Sta. Res. Bull.* 178,  
1935, pp. 196.
- 631.415.1 : 631.821.1**—Kutsenko, A. I. The prognosis of the  
effect of liming based on the agro-chemical indexes of the soils  
for barley, oats and a vetch and oats mixture. *Trudy Gidroz. Inst.*  
*Udob. Leningr. Lab.* 45, 1936 (147-170). [R.e.]
- 631.415.1 : 631.821.1** Radu, I. F. Laboratory experiments  
with solid  $\text{Ca}(\text{OH})_2$  for neutralizing the acidity of a podzol soil.  
*Lund. VersSta.* 125, 1936 (201-227). [G.]
- 631.415.1 : 631.821.1**—Brown, B. A.; Munsell, R. I. Soil  
reactions at various depths as influenced by time since application,  
placement, and amount of limestone. *Proc. Soil Sci. Soc. Amer.*  
1, 1937 (271-275).
- 631.415.1 : 631.84**—Vries, O. de; Visser, W. C. The changes  
in soil pH with continuous fertilizing with some nitrogenous  
fertilizers. *Ztschr. Pflanz. Düng.* 36A, 1934 (52-60). [G.]
- 631.415.1 : 631.84**—Lewis, R. D.; Fowler, E. D. Influence  
of nitrogen fertilizers on reaction of Greenville sandy loam soil.  
*Proc. 28th Ann. Conf. S.E. Pecan Grow. Assoc.* 1935 (12-14).  
B.C.A. 55(658).
- 631.415.1 : 631.85**—Barnes, E. E. Effect of soil reaction on  
the availability of phosphate fertilizers. *Ohio Agric. Expt. Sta. Bull.*  
432, 1934 (18). C.A. 28 (7402).
- 631.415.1 : 631.85**—Salter, R. M.; Barnes, E. E. The  
efficiency of soil and fertilizer phosphorus as affected by soil reaction.  
*Ohio Agric. Expt. Sta. Bull.* 553, 1935, pp. 49.
- 631.415.1 : 631.85**—Strebeyko, P. Effect of the soil reaction  
on the availability of different forms of phosphoric acid. *Rocz.*  
*Nauk Roln.* 34, 1935 (153-200). [P.e.]
- 631.415.1 : 631.85**—Peterson, J. B. The effect of phosphate  
fertilizers on soil reaction. *Iowa St. Coll. J. Sci.* 11, 1936 (94-96).
- 631.415.1 : 631.85**—Peterson, J. B.; Smith, F. B.; Brown,  
P. E. The effect of phosphate fertilizers on the reaction of Grundy  
silt loam in greenhouse experiments. *Iowa St. Coll. J. Sci.* 11,  
1937 (293-309).
- 631.415.2**—Osugi, S. An acid soil of peculiar behaviour.  
*Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (72-73).
- 631.415.2**—Osugi, S.; Aoki, S.; Morita, S. Abnormal acid  
soil. II. *J. Agric. Chem. Soc. Japan* 11, 1935 (34-49). C.A. 29  
(3441).
- 631.415.2**—Osugi, S.; Nishigaki, N.; Yoshima, M. Abnor-  
mal acidic soils. III. *J. Agric. Chem. Soc. Japan* 11, 1935 (659-673).  
C.A. 29 (6992).

# FERTILIZERS AND GENERAL AGRONOMY

- 631.415.2:631.417**—**Osugi, S.; Aoki, M.** Abnormally acid soil. IV. Existence of organic acids in the soil. *J. Agric. Chem. Soc. Japan* 12, 1936 (995–1003). C.A. 31 (1139).
- 631.415.2:631.453**—**Baron-Hay, G. K.** Results of experiments on semi-bottlebrush and kangaroo-grass flats, group 113, Nornalup Road, west of Denmark. *J. Dept. Agric. W. Aust.* 10, 1933 (84–91). C.A. 29 (267).
- 631.415.2:631.81**—**Scharrer, K.; Schropp, W.** The influence of nutrient supply on plant growth at high soil acidities. *Ztschr. Pflanz. Düng.* 39, 1935 (265–278). [G.]
- 631.415.2:631.81**—**Liesegang, H.** A 7-years field experiment with potash salts applied in conjunction with different nitrogenous and phosphatic fertilizers on a strongly acid soil. *Ernähr. Pflanze* 33, 1937 (269–277). [G.e.s.]
- 631.415.2:631.811.4** **Wiodek, J.; Czynciel, J., et al.** Action of calcium fertilization. *Rocz. Nauk Roln.* 36, 1936 (331–378). C.A. 30 (7265). [P.g.]
- 631.415.2:631.821.1**—**Abaturova, E. A.** The causes of the negative effect of excessive amounts of lime on acid soils. *Khim. Sotsial. Zemled.* No. 5, 1936 (40–49). [R.]
- 631.415.2:631.85**—**Rörig, W.** Decomposition of phosphate fertilizers in exchange-acid soils. *Phosphorsäure* 5, 1935 (437–450). B.C.A. 55 (950). [G.]
- 631.415.2:631.85**—**Wright, K. E.** Effects of phosphorus and lime in reducing aluminium toxicity of acid soils. *Plant Physiol.* 12, 1937 (173–181).
- 631.415.3** **Chowdhury, S. C.** Alkali soils. *Allahabad Farmer* 9, 1935 (33–40).
- 631.415.3:541.18.05**—**Asghar, A. G.; Puri, A. N.; Taylor, E. McK.** Soil deterioration in the canal-irrigated areas of the Punjab. Part II. Relation between degree of alkalization and dispersion coefficient in deteriorated soils. *Punjab Irrig. Res. Inst. Res. Pub.* 4, No. 8, 1935, pp. 7.
- 631.415.3:631.413.41**—**Okhotin, V.; Smirnova, O. F.** The physico-mechanical properties of alkali soils and their modification under the influence of salts. *Pedology* No. 2, 1934 (237–259). [R.e.]
- 631.415.3:631.413.41** **Taylor, E. McK.; Puri, A. N.; Asghar, A. G.** Soil deterioration in the canal irrigated areas of the Punjab, Part I. Equilibrium between Ca and Na ions in base exchange reactions. *Punjab. Irrig. Res. Inst. Res. Pub.* 4, No. 7, 1935, pp. 15.
- 631.415.3:631.415.8**—**Chowdhury, S. C.** Alkali soils. *Allahabad Farmer* 9, 1935 (79–90).
- 631.415.3:631.432**—**Jennings, D. S.; Gardner, W.; Israel-sen, O. W.** Seepage of underground water and its relation to alkali accumulation. *Utah Agric. Expt. Sta. Circ.* 106, 1934 (2–12). C.A. 28 (7394).
- 631.415.3:631.432** **Arany, A. S.; Babarczy, J.** Salt efflorescences and ground waters of the Hungarian Great Plain. *Mezőg. Kutat.* 10, 1937 (89–96). [H.e.]
- **631.415.3:631.434**—**Moiseev, I. G.** A study of the effect of absorbed Na and K on the structure formation of suspensions of solonchaks soils. *Pedology* No. 3, 1937 (359–380). [R.e.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.415.3 : 631.434** --Storck, G. The origin of soda in cultivated and uncultivated soil and its effect on soil structure and plant growth. *ForschDienst*, 3, 1937 (441-448). (G.)
- 631.415.3 : 631.461** Adachi, M.; Imamura, T. Microbiological investigations on the soils of Taiwan (Formosa) Ninth Part. Studies on the microbiological properties of alkali soils. III. On the heterotrophic bacteria. *J. Soc. Trop. Agric. Japan* 6, 1934 (144-160). (J.)
- 631.415.3 : 631.821.2** Sushko, E. S. Soil crusts in cotton fields. *Trudy Gidrotz. Inst. Udob. Leningr. Lab.* No. 34, 1934 (17-26). (C.A. 28 (7393).)
- 631.415.3 : 631.821.2** Uspanov, U. U. Effect of gypsum on artificial solonets. *Trans. Dokuchac. Inst.* 9, 1934 (84-99). (C.A. 54 (164).)
- 631.415.3 : 631.821.2** Kurgansky, A. G.; Yakovleva, V. V. Gypsum as an ameliorant for solonets soils. *Khim. Sotsial. Zemled.* No. 6, 1937 (27-37). (R.)
- 631.415.3 : 631.83** --Dean, H. L.; Smith, F. B. The effects of potash and crop residues on available potassium in some alkali soils of Iowa. *Proc. Iowa Acad. Sci.* 40, 1933 (96). (C.A. 29 (2644). P.I.S. 10 (135).)
- 631.415.3 : 633** Tamhane, V. A.; Mulwani, B. T. Removal of some of the injurious salts by ordinary farm crops. *Proc. 22nd Indian Sci. Cong.* 1935 (363). *Herb. Abstr.* 7 (73).
- 631.415.3 : 633** Kearney, T. H.; Scofield, C. S. Choice of crops for saline land. *U.S.D.A. Circ.* 404, 1936, pp. 24.
- 631.415.36** Antipov-Karataev, I. N. A complex method for investigating the physical, chemical and agrochemical characteristics of Transvolga soils in connection with irrigation. *C.R. Acad. Sci. (U.S.S.R.)* Nov. 1933 (18-66).
- 631.415.36** Israelsen, O. W.; Gardner, W.; Jennings, D. S. Some factors which influence the reclamation of water-logged and alkali lands. *Utah Agric. Expt. Sta. Bull.* 250, 1934 (61-62). (C.A. 30 (1917).)
- 631.415.36** Arany, A. On the methods of reclamation of the alkali ("szik") soils of the "Hortobagy". *Mezőg. Kutat.* 8, 1935 (44-61). (H.)
- 631.415.36** Belkin, N. I. Reclamation of solonets soils. *Khim. Sotsial. Zemled.* No. 6, 1935 (45-55). (R.)
- 631.415.36** Chowdhury, S. C. Alkali soils. III. Reclamation of alkali soils. *Allahabad Farmer* 9, 1935 (119-132).
- 631.415.36** Gantimurov, I. I. Alkali soils and their cultivation in Trans-Baikalia. *Pedology* No. 2, 1935 (149-166). (R.)
- 631.415.36** --Henkel, P. A.; Oborin, A. I., et al. Contributions of a group investigation of solonets and its amelioration. *Trudy Biol. Inst. Perm.* 7, No. 1-2, 1935 (1-141). (C.A. 30 (5707).) (R.)
- 631.415.36** Rozov, L. P. Experiment with the leaching of solonchaks in the Charyn section of the Ili river. *Trudy Inst. Hydrotekh.* 14, 1935 (5-22). *Pedology* 1936 (947). (R.)
- 631.415.36** --Ahi, S. M.; Metzger, W. H. Comparative physical and chemical properties of an alkali spot and an adjoining normal soil of the prairie soils group. *Amer. Soil Surv. Bull.* 17, 1936 (9-12).

## FERTILIZERS AND GENERAL AGRONOMY

**631.415.36** Dhar, N. R.; Mukerji, S. K. Alkali soils and their reclamation, Part II. *Proc. Nat. Acad. Sci. India* 6, 1936 (297-303).

**631.415.36** Thomas, E. E. Reclamation of white-alkali soils in the Imperial Valley. *Calif. Agric. Expt. Sta. Bull.* 601, 1936, pp. 15.

**631.415.36** -Endrédi, A. v. Improvement of alkaline soils by formation of ponds used for fish breeding. *Cong. Int. Tech. Chim. Indust. Agric. 5th Cong. Holland* 1, 1937 (254-260). B.C.A. 56 (955).

**631.415.36** : **546.22** Thomas, E. E. Reclamation of black-alkali soils with various kinds of sulphur. *Hilgardia* 10, 1936 (127-142).

**631.415.36** : **631.437.2** Puri, A. N.; Anand, B. Reclamation of alkali soils by electrolysis. *Soil Sci.* 42, 1936 (23-27).

**631.415.36** : **631.87** Dhar, N. R.; Mukherji, S. K.; Seshacharyulu, E. V. Oil cakes and press mud can fertilize alkali fields. *Proc. Soc. Biol. Chem. India* 1, 1936 (36-37).

**631.415.36** : **664.15** Dhar, N. R. A new method of nitrogen fixation and conservation and reclamation of alkali lands. *Address Indian Acad. Sci. Meet.* 19th Dec., 1935, pp. 46.

**631.415.36** : **664.15** Dhar, N. R. Problem of utilization of molasses. *Agric. Linc-Stk. India* 6, 1936 (826-841).

**631.415.36** : **664.15** Dhar, N. R.; Mukerji, S. K. Alkali soils and their reclamation. Part I. *Agric. Linc-Stk. India* 6, 1936 (850-855).

**631.415.36** : **664.15** Dhar, N. R.; Mukerji, S. K.; Biswas, N. N. Alkaline soils and their reclamation. *C. R. Acad. Agric.* 23, 1937 (770-774). F.

**631.415.7** : **631.411.1** Fehér, D. Investigations on the soil indicator value of the plant associations of some sandy soils. *Ztschr. Pflanz. Dung.* 40, 1935 (129-137). G.

**631.415.7** : **631.411.2** Volk, O. H. Lime and gypsum plants, a contribution to the subject of soils and plants. *Ber. Deut. Bot. Ges.* 53, 1935 (796-806). G.

**631.415.7** : **632.51** Schmalfuss, K. Weeds and soil reaction. *Angew. Bot.* 17, 1935 (191-199). C.A. 29 (6681). G.

**631.415.7** : **632.51** Russell, E. J. Critical review of problems discussed, interactions between roots and between plants, weed flora as an indicator of soil conditions in agriculture. *Proc. 8th Int. Bot. Cong. Amsterdam*, 1, 1936 (153-155).

**631.415.8** Kedrov-Zikhman, O. Behaviour of cultivated plants towards soil acidity in conjunction with the liming of soils. *Trans. Int. Soc. Soil Sci. Soviet Sect. 4th Comm.* 1933 (75-108). G.

**631.415.8** Kedrov-Zikhman, O. The behaviour of cultivated crops towards soil acidity in relation to liming. *Pedology* 4, 1933 (287-301). *Bied. Zbl.* 5 (519). [R.]

**631.415.8** Morani, V. Soil reaction and crop production. *Ann. Sper. Agrar. Roma* 13, 1934 (85-91). I.

**631.415.8** Aslander, A. Acidity resistance and feeding power of plants. *Svensk Bot. Tidskr.* 29, 1935 (27-44). [Sw.e.]

**631.415.8** Decoux, L. The physiological significance of soil reaction for industrial plants and the effect of fertilizers on the content of industrial plants in their elements which are useful to industry. *Inst. Belge Amélior. Better. Pub. No.* 6, 1935 (349-365). [F.d.u.g.e.]

# BIBLIOGRAPHY OF SOIL SCIENCE

**631.415.8—Gregoire, A.** pH in agronomy. *Inst. Belge Andlor. Better. Pub.* 6, 1935 (367-373). [E.d.g.e.]

**631.415.8—Roboz-Rosenbluh, E.** The physiological significance of soil reaction for industrial plants and the effect of fertilizers on the content of these plants in elements of industrial utility. *Inst. Belge Andlor. Better. Pub.* 6, 1935 (384-397). [E.d.g.e.]

**631.415.8—Sigmund, A. A. J. de.** The physiological significance of soil reaction for industrial plants and the effect of fertilizers on the content of these plants in elements of industrial utility. *Inst. Belge Andlor. Better. Pub.* 6, 1935 (374-383). [E.d.g.e.]

**631.415.8—Kearney, T. H.** The choice of crops for saline land. *U.S.D.A. Circ.* 404, 1936, pp. 24.

**631.415.8—Olsen, C.** Lime-loving and lime-hating plants. *Indsskr. Landekon.* 1936 (649-672). Da

**631.415.8—Thomson, J. S.; Simpson, G.** Notes on hydrogen-ion concentration of forest soils in the vicinity of Dunedin, New Zealand. *Trans. Roy. Soc. N.Z.* 66, 1936 (192-200).

**631.415.8: 631.445.5 Gantimurov, I. I.** The specificity of soil and plant covering of steppe. *Ztschr. Pflanz. Dung.* 37, 1935 (129-136). G.

## 631.416 CHEMICAL COMPOSITION OF SOILS

**631.416—Drachev, S. M.** Solubility of the solid phase of soil in water. *Soil Sci.* 35, 1933 (75-83).

**631.416—Kirsanov, A.; Bolotina, N. I.; Seniushov, A. G., et al.** The degree of uniformity of distribution of available nutrients in various soils and their dynamics during the vegetation period. *Trans. Dokuchaev. Soil Inst.* 12, 1935 (59-102). CA 31:5493.

**631.416—Turchin, F. V.** The rôle of potash and phosphate in the assimilation of different forms of nitrogen by plants. *Ztschr. Pflanz. Dung.* 44, 1936 (65-83). G.

**631.416—Borden, R. J.** The availability of the principal nutrients in a soil during the crop-growth period. *Hawaii Plant. Rec.* 41, 1937 (47-55).

**631.416—Hibbard, P. L.** Availability of plant nutrients. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (149-151).

**631.416—Truog, E.** Availability of essential soil elements—a relative matter. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (135-142).

**631.416: 525.5 Sreenivasan, A.; Subrahmanyam, V.** On the nature and extent of periodic fluctuations in certain soil constituents. *J. Indian Inst. Sci.* 17A, 1934 (113-126).

**631.416: 546.16: 546.431—MacIntire, W. H.; Shaw, W. M.; Robinson, B.** A barium-fluorine study. The fate of added barium-silicofluoride and its effect upon sulphates and other soil components, as influenced by limestone and by dolomite. *Tenn. Agric. Expt. Sta. Bull.* 155, 1935, pp. 31.

**631.416: 551.41—Kats, R. S.** Distribution of water-soluble salts in the loess of South Ukraine in relation to the relief. *Pedology* No. 4, 1935 (604-614). [Re.]

**631.416: 581.192—Onogi, S.; Aoki, M.** Studies on the tea-garden soil of low fertility in Yamashiro district, Japan. *J. Sci. Soil Japan* 11, 1937 (109-115). [J.e.]

# FERTILIZERS AND GENERAL AGRONOMY

**631.416:581.5**—Schröter, H. Relationship of plants to the lime content of their habitat. *Ztschr. Pflanz. Düng.* 29A, 1933 (131-141). [B.C.A. 52 (565)].

**631.416:581.5**—Young, V. A. Certain sociological aspects associated with plant competition between native and foreign species in a saline area. *Ecology* 17, 1936 (133-142).

**631.416:581.5**—Robinson, R. R. Soil properties determining the botanical composition of pastures in West Virginia. *J. Agric. Res.* 54, 1937 (877-897).

**631.416:616.006.46**—Berg, R. Cancer and mineral exchange. *Chem.-Ztg.* 1935, No. 80 (813), No. 82 (834). *Ernähr. Pflanze* 32 (74). [G.]

**631.416:619**—Bryan, O. C.; Becker, R. B. The mineral content of soil types as related to "salt sick" of cattle. *J. Amer. Soc. Agron.* 27, 1935 (120-127).

**631.416:625.7.8**—Smolik, L. Pedochemical and biochemical influence of roads on the soils of a tjaacent fields. *Stborn. Čsl. Akad. Zeměd.* 11, 1936 (159-167). [Cz.g.]

**631.416:631.413**—Meyer, L. Neutralization and Pt-potential curves in soil suspensions. *C.R. Soc. Biol. Paris* 116, 1934 (787-791). P.I.S. 9 (164). [F.]

**631.416:631.417**—Franceschi, A. V. The relation of buffer capacity and organic matter to the solubility of the nutrient elements in Toa silt loam. *J. Agric. P.R.* 20, 1936 (655-679).

**631.416:631.432.3**—Kusmin, N.; Ulssewitsch, W. Studies on the mobility of nutrients in soil. *J. Expt. Landw. S.-O. Europ. Russ.* 9. *Bied. Zbl.* 64 (96).

**631.416:631.432.3**—Scharer, K. The movement and leaching of plant nutrients in the soil. *Forsch.Dienst.* 1, 1936 (352-362). [G.]

**631.416:631.461**—Fehér, D.; Frank, M. Microbiological investigations on the dynamic cycle of nitrogen, phosphorus and potash in soil. *Bodenk. Pfl.Ernähr.* 1, 1936 (196-219). [G.]

**631.416:631.461**—Krasilnikov, N. A. Focal distribution of micro-organisms in soils. *Bull. Acad. Sci. (U.S.S.R.) (Cl. Sci. Math.) Biol. Ser.* No. 1, 1936 (193-214). [R.g.]

**631.416:631.472**—Ferrière J. F. de. Vertical distribution of plant nutrients in some French soils. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (243-246). [F.]

**631.416:631.472**—Robertson, I. M.; Stewart, A. B. The effect of the lower layers of typical Scottish soils on the uptake of nutrients by plants. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (247-249).

**631.416:631.51**—Clarens, J.; Lacroix, J. Study of soils. Localization of their actual assimilable reserves in the soil. Their increase by mechanical actions. *Bull. Soc. Chim. Fr.* 3, 1936 (2063-2068). C.A. 31 (1926). [F.]

**631.416:631.51**—Opitz, K.; Rath sack, K.; Wegener, A. Further investigations on the importance of soil cultivation and potash fertilizing for the chemical status of the soil. *Landw. Jahrb.* 83, 1936 (391-399). [G.]

**631.416:631.81**—Snider, H. J. A chemical study of a soil under long-continued field experiments. *J. Amer. Soc. Agron.* 26, 1934 (946-953).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.416 : 631.81**—Carter, L. S. Some chemical and biological changes produced in a Fox sandy loam by certain soil management practices. *Soil Sci.* 40, 1935 (223-236).
- 631.416 : 631.81**—Thornton, S. F. Soil and fertilizer studies by means of the Neubauer method. *Indiana (Purdue) Agric. Expt. Sta. Bull.* 399, 1935 (3-38). C.A. 30 (1491).
- 631.416 : 631.81**—Blair, A. W.; Prince, A. L. Some effects of long-continued manure, fertilizer, and lime treatment. *N. J. Agric. Expt. Sta. Bull.* 604, 1936, pp. 24. J.H.B. 5 (19219).
- 631.416 : 631.81**—Vincent, . . . The increase of alkaline elements in the lower horizons of the Leon soils. *Bull. Assoc. Franç. Ét. Sol* 3, 1937 (8-11). F.
- 631.416 : 664.15**—Bhaskaran, T. R.; Narasimhamurthy, G., et al. Investigations on the rôle of organic matter in plant nutrition. Part IV. Chemical and biological transformations attendant on the application of cane molasses to swamp soil. *Proc. Indian Acad. Sci.* 1, 1934 (155-182).
- 631.416 : 664.15**—Narasimhamurthy, G.; Subrahmanyam, V. Investigations on the rôle of organic matter in plant nutrition, Pt. VII. Economy of carbon during decomposition of cane molasses in the swamp soil. *Proc. Indian Acad. Sci.* 1, 1935 (823-836).
- 631.416.1**—Mitscherlich, E. A.; Sauerlandt, W. Nitrate- and ammonia-nitrogen in soil and the plant physiologically effective nitrogen "b". *Landw. Jahrb.* 81, 1935 (623-654). G.]
- ✓ **631.416.1**—Sahasrabudde, D. L. Nitrogen fluctuations and cycles in soils. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (222-224).
- 631.416.1**—Morse, F. W. A study in soil nitrogen. *Mass. Agric. Expt. Sta. Bull.* 333, 1936, pp. 20.
- 631.416.1**—Demolon, A.; Bastisse, E. Lysimeter experiments on the mobilization of the nitrogenous and mineral reserves of the soil. *C.R.* 204, 1937 (1495-1497). F.
- 631.416.1**—International Sugar Journal. A symposium on the nitrogen supply to the soil. *Int. Sug. J.* 39, 1937 (417-420).
- 631.416.1**—Sahasrabudde, D. L. Fluctuations, recuperation and fixation of nitrogen in the soils of Western India. *Proc. Nat. Inst. Sci. India* 3, 1937 (139-147).
- 631.416.1**—Sreenivasan, A.; Subrahmanyam, V. Some factors influencing studies on nitrogen fluctuations in soil plots. *Proc. Nat. Inst. Sci. India* 3, 1937 (233-239).
- 631.416.1**—Várallyay, G. Changes in the ammonia and nitrate content of soil. *Botanik Pflanzn* 2, 1937 (192-198). G.]
- 631.416.1**—Viswanath, B. The vicissitudes of nitrogen in the soil system. *Proc. Nat. Inst. Sci. India* 3, 1937 (149-153).
- 631.416.1 : 525.5**—Olendsky, V. I. Dynamics of water-soluble forms of organic nitrogen and of mineral nitrogen in Kuban chernozem. *Vitim. Sborn. Rab. Sekt. Agrotech.* No. 119, 1935 (59-79). Re.
- 631.416.1 : 547.458.84**—Osugi, S.; Endo, T. On the effect of lignin upon the decomposition of protein. *J. Sci. Soil Japan* 9, 1935 (15-24). J.e.]
- 631.416.1 : 547.458.84**—Waksman, S. A.; Hutchings, I. J. The function of cellulose and lignin in the preservation of nitrogen in soils and in composts. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (163-167).

## FERTILIZERS AND GENERAL AGRONOMY

- 631.416.1 : 551.577** — Ram, A. Origin of combined nitrogen in the atmosphere. The analysis of tropical rain and its importance in agriculture. *Proc. Acad. Sci. U.P. India* 4, 1934 (147-158) C.A. 30 (558).
- 631.416.1 : 631.458** — Bracken, A. F.; Greaves, J. E. Analysis of the factors responsible for loss of nitrogen and organic matter from dry lands. *Utah Agric. Expt. Sta. Bull.* 250, 1934 (21). C.A. 30 (1924).
- 631.416.8 : 631.461.1.3** Waksman, S. A. The rôle of micro-organisms in the liberation and immobilization of nitrogen in the soil. *Proc. World's Grain Exh. and Conf. Canada*, 2, 1933 (370-374).
- 631.416.1 : 631.461.1.3** Rossi, G. de. Nitrogen cycle in the soil, microbial activities and physico-chemical actions. *Proc. Sixth Int. Bot. Cong., Amsterdam*, 1935, pp. 20.
- 631.416.1 : 631.461.1.3** Thom, C. Micropopulations correlated to decomposition processes. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (160-163).
- 631.416.1 : 631.461.3** Fraps, G. S.; Sterges, A. J. The relation of the nitrifying capacity of soils to the availability of ammonia and nitrates. *Soil Sci.* 36, 1933 (465-470).
- 631.416.1 : 631.461.3** — Gainey, P. L. Total nitrogen as a factor influencing nitrate accumulation in soils. *Soil Sci.* 42, 1936 (157-163).
- 631.416.1 : 631.51** Savostin, S. P.; Sapozhnikova, K.; Pentina, M. A. The biodynamics of Taiga soils in relation to their nitrogen fertility. *Trudy Tomskogo Univ.* 86, 1934 (10-29). *Pedology* 1936 (925). R.
- 631.416.1 : 631.58** — Nikolaev, I. V. The effect of manure and soil cultivation on nitrate soil content under East Siberian conditions. *Izv. Biol.-Geog. Inst. Irkutsk. Univ.* 6, Nos. 2-4, 1935 (5-13). *Pedology* 1937 (133).
- 631.416.1 : 631.58** — Karraker, P. E. The effect of certain management practices on the amount of nitrogen in a soil. *J. Amer. Soc. Agron.* 28, 1936 (292-296).
- 631.416.1 : 631.67** — Sahasrabuddhe, D. L.; Abhyankar, V. S. Nitrogen recuperation in the soils of the Bombay Presidency, Part IV. *Indian J. Agric. Sci.* 6, 1936 (268-315).
- 631.416.1 : 631.81** — Randolph, E. E.; Garren, G. M. The effect of fertilization upon nitrogen content of a Cecil clay loam soil over a period of 31 years. *J. Elisha Mitchell Sci. Soc.* 50, 1934 (48-49). C.A. 29 (1564).
- 631.416.1 : 631.841.1** — Turner, P. E. Effect of heavy dressings of ammonium sulphate on soil content of nitrogen. *Proc. Sug. Cane Invest. Cttee. Trin.* 4, 1933 (247, 252). C.A. 29 (1922).
- 631.416.1 : 631.87** — Waksman, S. A.; Hutchings, I. J. The rôle of plant constituents in the preservation of nitrogen in the soil. *Soil Sci.* 40, 1935 (487-497).
- 631.416.1 : 633.3** Bjälfe, G. The nodules of different varieties, percentage of nitrogen in legumes and their influence on the nitrogen economy of the soil. *Medd. Cent. Inst. Försöksv. Jordbr.* 455, 1935, pp. 37 (Swe.).
- 631.416.11** — Gedroiz, K. K. Adsorbed ammonium as a source of nitrogen for plants and its influence on the soil. *Miner. Udob.* 1, 1933 (113). B.C.A. 54 (967).



# BIBLIOGRAPHY OF SOIL SCIENCE

**631.416.11—Nehring, K.** The fixation of ammonium compounds in the soil and their utilization by plants. *Ergeb. Agr. Chem.* 4, 1935 (139-160). C.A. 31 (1139)

**631.416.13: 631.51—Albrecht, W. A.** The nitrate nitrogen in the soil as influenced by the crop and the soil treatments. *Missouri Agric. Expt. Sta. Res. Bull.* 250, 1937, pp. 27.

**631.416.13: 631.84—Lewis, R. D.; Fowler, E. D.** Effect of various nitrogen fertilizers on nitrates in the soil and on pecan-tree growth on Greenville sandy loam. *Proc. 30th Ann. Conv. S.-E. Pecan Grow. Assoc.*, 1936 (34-38, 40-44).

**631.416.13: 631.84—Marsh, R. S.** Soil nitrate nitrogen determinations following the applications of calcium cyanamide and nitrate of soda to the surface of the soil under apple trees during dry and normal seasons. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (142-144).

**631.416.13: 631.84—Rheinwald, H.** The ammonia and nitrate concentration of the soil solution and the effect on them of the rate and kind of nitrogenous fertilizer application. *Ztschr. Pflanz. Dung* 44, 1936 (44-65). G.

**631.416.2—Aliamovsky, N. I.; Zhezhe, N. G.** On the irregular distribution of easily soluble phosphoric acid in soil. *Pedology* No. 5, 1934 (639-644). R.

**631.416.2—Millar, H. C.; Smith, F. B.** Significance of carbon dioxide in making phosphorus available in soils. *Proc. Iowa Acad. Sci.* 41, 1934 (117-121). B.C.A. 55 (34).

**631.416.2—Rauterberg, E.** Solubility and distribution of phosphoric acid in soil. *Ztschr. Pflanz. Dung* 36A, 1934 (270-282). G.

**631.416.2—Dukes, H.** The effect of dilution on the solubility of soil phosphorus. *J. Amer. Soc. Agron.* 27, 1935 (760-763).

**631.416.2—Fraps, G. S.; Sterges, A. J.** Availability of nitrous nitrogen to plants. *Tex. Agr. Expt. Sta. Bull.* 515, 1935, pp. 27.

**631.416.2—Millar, H. C.; Smith, F. B.; Brown, P. E.** The relative solubilities of soil phosphorus in different solvents. *Proc. Iowa Acad. Sci.* 42, 1935 (99-102). C.A. 30 (8474).

**631.416.2—Rauterberg, E.** The next type of distribution of phosphoric acid in soil. *Ztschr. Pflanz. Dung* 38, 1935 (282-293). G.

**631.416.2—Shtatnov, V. I.; Odintsova, S. V.** The availability to plants of absorbed (fixed) phosphoric acid. *Khim. Sotsial. Zemled.* No. 5, 1935 (37-45). R.

**631.416.2—Verona, O.** The micro-biochemical cycle of phosphorus in farm land and the direct utilization of raw phosphates. *Ital. Agric.* 72, 1935 (131-135). *Bot. Abs.* 10 (2298). I.

**631.416.2—Aubert, G.** The estimation of phosphoric acid requirement of soils. *Ann. Agron.* 6 (n.s.), 1936 (587-594). F.

**631.416.2—Thun, R.** The solubility of the nutrients potash and phosphoric acid in boiling water. *Bodenk. Pflernähr.* 2, 1936 (34-44). [G.]

**631.416.2—Gleria, J. di; Telegdy-Kováts, I. de.** On the solubility of soil phosphorus. *Meseg. Kútal.* 10, 1937 (36-48). H.e.)

## FERTILIZERS AND GENERAL AGRONOMY

**631.416.2—Holman, W. M.** A study of phosphate solubility in certain New South Wales soils. *J. Proc. Roy. Soc. N.S. Wales* 70, 1937 (267-284). C.A. 31 (5087).

**631.416.2—Küon, S.** Experiments relative to the determination of readily-assimilable reserves of potash and phosphoric acid in the soil. *Superphosphate* 10, 1937 (121-134).

**631.416.2—Smith, F. B.; Brown, P. E.; Hoover, C. D. et al.** The availability of phosphorus in some Iowa soils. *Iowa St. Coll. J. Sci.* 11, 1937 (231-243).

**631.416.2—Williams, R.** The solubility of soil phosphorus and other phosphorus compounds in sodium hydroxide solutions. *J. Agric. Sci.* 27, 1937 (259-270).

**631.416.2: 546.284 Akhromeiko, A. I.** Influence of silicic acid on utilization of phosphates of varied origin by plants. *Ztschr. Pflanz. Düng.* 34A, 1934 (340-359). B.C.A. 53 (901). [G.]

**631.416.2: 546.284—Akromeiko, A. I.** The effect of silicic acid on the utilization of  $P_2O_5$  by plants. *Trudy Nauch. Inst. Udobr.* 126, 1935 (103-120). [R.G.]

**631.416.2: 546.284 Sreenivasan, A.** Investigations on the rôle of silicon in plant nutrition, Part III. On the nature of interaction of soil or hydrogels of iron oxide or alumina with mixtures of phosphates and silicates. *Proc. Indian Acad. Sci.* 3 B, 1936 (283-301).

**631.416.2: 546.47—Mlohorčič, H.** The rôle of zinc sulphate in soil treatment. *Ztschr. Pflanz. Düng.* 43, 1936 (129-134). C.A. 30 (7753). [G.]

**631.416.2: 549—Leahey, A.** Mineralogical and chemical studies on some of the inorganic phosphorus compounds in the soil. *Sci. Agric.* 15, 1935 (704-712). C.A. 29 (7549).

**631.416.2: 612.753 Lefort, G.** The influence of the soil on the skeleton and temperament of the Boulogne horse. *Bull. Assoc. Franç. Ét. Sol* 2, 1936 (209-218). [F.]

**631.416.2: 619 Rubino, M. C.** The lack of mineral salts, especially phosphoric acid, in our soils. *Rev. Asoc. Rur. Uruguay*, 1935, No. 6 (35-37). C.A. 30 (799).

**631.416.2: 619 Turner, A. W.; Kelley, R. B.; Dann, A. T.** Peg-leg of cattle in North Queensland. *Aust. J. Coun. Sci. Indust. Res.* 8, 1935 (120-128).

**631.416.2: 619 Svanberg, O.** Report of three years' experience in the control of deficiency diseases of stock in the island of Gotland. *Kgl. Landbr. Akad. Handl. Tidskr.* No. 3, 1937 (354-394). [Swe.]

**631.416.2: 631.411.2—McGeorge, W. T.** The relation of potential alkalinity to the availability of phosphate in calcareous soils. *Soil Sci.* 39, 1935 (443-452).

**631.416.2: 631.411.2—Chapman, H. D.** Effect of nitrogenous fertilizers, organic matter, sulfur, and colloidal silica on the availability of phosphorus in calcareous soils. *J. Amer. Soc. Agron.* 28, 1936 (135-145).

**631.416.2: 631.411.2 Joret, G.; Malterre, H.** The phosphoric acid requirement of chalk soils. *C.R. Acad. Agric.* 22, 1936 (695-699).

**631.416.2: 631.413.2—Askew, H. O.** Soil phosphate studies. Part I. Solubility of soil phosphate and fixation of added phosphate at varying pH values. *N.Z. J. Sci. Tech.* 16, 1934 (145-153).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.416.2 : 631.413.2 --Ayres, A. Phosphate fixation in Hawaiian soils. II. *Hawaii. Plant. Rec.* 38, 1934 (131-145). C.A. 28 (6228).
- 631.416.2 : 631.413.2 Gaarder, T. Fixation and solution of phosphoric acid in soil. *Nord. Jordbr. Forsk.* 1934 (197-216). (N.)
- 631.416.2 : 631.413.2 Askew, H. O. Soil phosphate studies. Pt. II. Fixation of phosphate by  $R_2O_3$  oxides in sodium and calcium clays. *N.Z. J. Sci. Tech.* 16, 1935 (278-295). *Cauthron Inst. Pasture Res. Pub.* No. 27.
- 631.416.2 : 631.413.2 Bradfield, R.; Scarseth, G.; Steele, J. G. Factors affecting the retention of phosphate by clays. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (74-75).
- 631.416.2 : 631.413.2 Dix, W. The behaviour of phosphoric acid in the soil. *Das Superphosphat* 11, 1935 (27-31). J 11 B 4 (204). G.
- 631.416.2 : 631.413.2 Doughty, J. L. Phosphate fixation in soils, particularly as influenced by organic matter. *Soil Sci.* 40, 1935 (191-202).
- 631.416.2 : 631.413.2 Gaarder, T.; Grahl-Nielsen, O. The fixation of phosphoric acid in soil. II. Investigation in West Norway. *Midd. Vedlandets Forst Forsk.* 18, 1935, pp. 107. (G.)
- 631.416.2 : 631.413.2 Hance, F. E.; Yuen, Q. H. Phosphate fixation in Hawaiian soils. IV. Rapid methods for determining capacity, rate, degree and differentiation of fixation. *Hawaii. Plant. Rec.* 39, 1935 (97-108).
- 631.416.2 : 631.413.2 Heck, A. F. Availability and fixation of phosphorus in Hawaiian soils. *J. Amer. Soc. Agron.* 27, 1935 (874-884).
- 631.416.2 : 631.413.2 Hibbard, P. L. Factors influencing phosphate fixation in soils. *Soil Sci.* 39, 1935 (336-358).
- 631.416.2 : 631.413.2 International Sugar Journal. Retentory soils and phosphate fixation. *Int. Sug. J.* 37, 1935 (382-384).
- 631.416.2 : 631.413.2 Kurchatov, P. A.; Pil', Y. F.; Greshnov, P. D. Soil phosphates. *Vitam. Storn. Rab. Sekt. Agro-izh.* No. 119, 1935 (81-91). R. e.
- 631.416.2 : 631.413.2 Scarseth, G. D. The mechanism of phosphate retention by natural aluminosilicate colloids. *J. Amer. Soc. Agron.* 27, 1935 (596-616).
- 631.416.2 : 631.413.2 Marek, H. W. van der. A study of  $PO_4$ -fixation in soils. *Landbouwk. Tijdschr.* 48 (Jrg. 1936) (496-503). D. u. e.
- 631.416.2 : 631.413.2 Tiulin, A. F. Availability of soil phosphates for the plant from the viewpoint of colloid chemistry. *Soil Sci.* 42, 1936 (291-299).
- 631.416.2 : 631.413.2 Beater, B. E. The measurement of phosphate fixation in soils. *Soil Sci.* 44, 1937 (277-291).
- 631.416.2 : 631.413.41 Davydov, G. K. Absorption of phosphoric acid by plants from soils saturated by various cations. II. *Trudy Vost. Nauch. Inst. Sakh. Prom. (Moscow)*, No. 18, 1934 (155-170). C.A. 29 (8205). R. g.
- 631.416.2 : 631.413.42 Cook, R. L. Divergent influence of degree of base saturation of soils on the availability of native, soluble and rock phosphates. *J. Amer. Soc. Agron.* 27, 1935 (297-311).

# FERTILIZERS AND GENERAL AGRONOMY

- 631.416.2:631.415.1** Doerell, E. G. The relationship between the reaction of a soil and its phosphate content. *Das Superphosphat* 11, 1935 (107-112). [C.A. 30 (1487).]
- 631.416.2:631.416.7** Benne, E. J.; Perkins, A. T.; King, H. H. The effect of calcium ions and reaction upon the solubility of phosphorus. *Soil Sci.* 42, 1936 (29-38).
- 631.416.2:631.416.872** Kriuchkova, A. P.; Popova, E. V. The effect of the iron content of soils on the utilization of  $P_2O_5$ . Experiments with Azotobacter. *Mikrobiologia* 4, 1935 (603-610). [R.e.]
- 631.416.2:631.416.872** McDonald, J. A. Phosphate fixation in soils in relation to iron availability, and its possible connection with the gypsum-phosphate problem in cacao soils. *Imp. Coll. Trop. Agric. Trinidad, Fourth Ann. Rept. Cacao Res., 1934*, 1935 (86-87).
- 631.416.2:631.417** Kurchatov, P. Organic phosphorus in soils. *Vitim* No. 129, 1936 (33-42). [R.e.]
- 631.416.2:631.417.2** Flieg, O. The influence of humates on the mobility of phosphoric acid in soil. *Ztschr. Pflanz. Dung.* 38, 1935 (222-238). [G.]
- 631.416.2:631.432.2** Belkin, N. I. Dynamics of  $P_2O_5$  in the soil and its absorption by different soils at different degrees of moisture. *Trudy Omsk. Inst. S.-Kh.* 1, No. 3, 1935 (87-95). [R.g.]
- 631.416.2:631.432.21** Dunnewald, T. J. Solubility of soil phosphorus as affected by moistening and drying basic soils. *J. Amer. Soc. Agron.* 27, 1935 (325-329).
- 631.416.2:631.44** Krügel, C.; Dreyspring, C.; Heinz, W. Experiments carried out by the Hamburg Experimental Station. 41. Simultaneous determination of reserves of readily-soluble phosphoric acid in soils and of the degree of fixation of phosphoric acid from fertilisers. *Superphosphate* 7, 1934 (201-206).
- 631.416.2:631.44** Egnér, H.; Hydaht, F. The significance of soil type in judging phosphate requirements by the lactate method. *Nord. Jordbr.Forsk.* 5-7, 1935 (346-349). [Sw.]
- 631.416.2:631.445** Aleshin, S. N.; Igritskaia, E. B.; Nestiuk, N. N. Adsorption of anions and availability of adsorbed phosphates to plants. *Khim. Sotsial. Zemled.* No. 4, 1936 (30-38). [R.e.]
- 631.416.2:631.472** Behrens, W. U. The uptake and utilization of phosphoric acid in the different soil horizons by plants. *Ztschr. Pflanz. Dung.* 36.3, 1934 (343-348). [G.]
- 631.416.2:631.472** Hettterschij, C. W. G. The distribution of phosphoric acid in the soil. *Phosphorsäure* 5, 1935 (215-230).
- 631.416.2:631.472** Kirsanov, A. Does the  $P_2O_5$  extracted from the arable horizon or weak acid solutions physiologically equal that extracted from the deeper horizons? *Pedology* No. 5-6, 1935 (782-788). [R.e.]
- 631.416.2:631.472** Krügel, C.; Dreyspring, C.; Heinz, W. Experiments carried out by the Hamburg Experimental Station. 37. Reserves of readily soluble phosphoric acid in the arable soil and subsoil. *Superphosphate* 8, 1935 (26, 48-53).
- 631.416.2:631.547.2** Belkin, N. I. Does the phosphate regime of the soil change during the vegetative period? *Trudy Omsk. Inst. S.-Kh.* 1, No. 3, 1935 (97-104). [R.g.]

## BIBLIOGRAPHY OF SOIL SCIENCE

**631.416.2:631.811.2**—Bryan, O. C.; Neal, W. M. The influence of varying amounts of water-soluble phosphorus in different soil types on the response of cultivated crops. *J. Agric. Res.* 52, 1936 (459-466).

**631.416.2:631.813**—Kurtharov, P. A.; Rudenko, I. A. The effect of mineral fertilizers of different physiological characters and methods of application on the availability of phosphoric acid in the soil and on tobacco yield. *Vitim Shorn. Rab. Sekt. Agrotech.* No. 119, 1935 (5-18). [R.]

**631.416.2:631.813** Chapman, H. D. Nitrogen and sulphur affect phosphate in California soils. *Citrus Leaves* 17, No. 4, 1936 (5, 6, 21). [E.S.R. 76 (455)].

**631.416.2:631.821.1** Smith, F. B.; Dean, H. L. The effect of lime on the availability of phosphate in Tama silt loam. *Proc. Iowa Acad. Sci.* 40, 1933 (95). [C.A. 29 (2643)].

**631.416.2:631.821.1** Hardy, F. Effect of liming on the phosphate status of soil. *Proc. Sug. Cane Invest. Cttee. Trin.* 4, 1934 (336-337). [C.A. 30 (210)].

**631.416.2:631.821.1** Zalkind, T. L. Effect of liming on the absorbability of iron and aluminium phosphates. *Trudy Tsentr. Nauch. Inst. Sibir. Priro. (Moscow)*, No. 18, 1934 (171-190). [C.A. 29 (8295)]. [R.]

**631.416.2:631.821.1** Yarusov, S. S.; Tseitlin, I. S. The causes of the mobilisation of phosphoric acid when podsol soils are limed. *Khim. Selsk. Zemled.* No. 5, 1935 (28-37). [R.]

**631.416.2:631.821.1** Engels, O. The influence of liming on the solubility of phosphoric acid in soils. *Ztsch. Pflanz. Dung.* 43, 1936 (350-356). [G.]

**631.416.2:631.821.1** Naftel, J. A. Soil liming investigations. II. The influence of lime on the sorption and distribution of phosphorus in aqueous and soil colloidal systems. *J. Amer. Soc. Agron.* 28, 1936 (740-752).

**631.416.2:631.824** Obst, W. Mobilisation of plant nutrients in cultivated soils. *Kunststoffe* 30, 1933 (304-306). [B.C.A. 54 (116)].

**631.416.2:631.86** Alvarino, J.; Bonazzi, A. Solubilization of organic phosphorus. II. *Proc. Tech. Assoc. Cuban Sug.* 8, 1934 (115-118). [C.A. 30 (1919)].

**631.416.2:631.874** Krügel, C.; Dreyspring, C.; Görbling, J. Mobilisation of phosphoric acid in the soil by means of green manure. *Superphosphate* 8, 1935 (61-65).

**631.416.3:546.15** Balks, R. Investigations on the iodine question in Westphalia. *Landw. Jahrb.* 81, 1935 (939-1002). [G.]

**631.416.315** Itano, A.; Tsuji, Y. Investigation on the iodine content in the soils of Japan. *Ber. Ohara Inst.* 6, 1934 (371-381). [E.]

**631.416.315** Itano, A.; Tsuji, Y. Iodine contents in the soils in Japan. *Proc. Imp. Acad. Tokyo* 10, 1934 (524-527). [C.A. 29 (1562)].

**631.416.315** Itano, A.; Tsuji, Y. Investigation on the iodine contents in the soils of Japan. II: Influence of natural conditions and manuring on the iodine contents. *Ber. Ohara Inst.* 7, 1935 (103-114).

**631.416.315** Scharrer, K. The iodine content of the soils of Southern Germany. *Ztsch. Pflanz. Dung.* 39, 1935 (315-326). [G.]

# FERTILIZERS AND GENERAL AGRONOMY

- 631.416.315 Smolik, L. The iodine in the soils of Czechoslovakia. *Sborn. Čsl. Akad. Zeměd.* 10, 1935 (36-44). [Cze.]
- 631.416.319 Greaves, J. E. The arsenic content of soils. *Soil Sci.* 38, 1934 (355-362).
- 631.416.319 Dufilho, M. E. Arsenic in soils. *Bull. Soc. Pharm. Bordeaux* 74, 1936 (22-27). C. A. 30 (6489). *Bull. Assoc. Chim.* 1936 (485).
- 631.416.323 Beath, O. A.; Eppson, H. F.; Gilbert, C. S. Selenium and other toxic minerals in soils and vegetation. *Wyo. Agric. Expt. Sta. Bull.* 206, 1935, pp. 56.
- 631.416.323 Byers, H. G. Selenium occurrence in certain soils in the United States with a discussion of related topics. *U.S.D.A. Tech. Bull.* 482, 1935, pp. 47.
- 631.416.323 Byers, H. G.; Knight, H. G. Selenium in soils. *Indust. Engng. Chem.* 27, 1935 (902-904).
- 631.416.323 Chemiker-Zeitung. Selenium as a soil constituent. *Chem.-Ztg.* 59, 1935 (129). Z.P.D. 41 (238). G.
- 631.416.323 Hurd-Karrer, A. M. Factors affecting the absorption of selenium from soils by plants. *J. Agric. Res.* 15, 1935 (413-427).
- 631.416.323 Knight, H. G. The selenium problem. *J. Assoc. Off. Agric. Chem.* 18, 1935 (103-108). C. A. 29 (2646).
- 631.416.323 Strock, L. W. The distribution of selenium in nature. *Amer. J. Pharm.* 107, 1935 (1-14). *Herb. Abs.* 6 (129).
- 631.416.323 Williams, K. T.; Byers, H. G. Occurrence of selenium in the Colorado River and some of its tributaries. *Indust. Engng. Chem. Anal. Ed.* 7, 1935 (431-432).
- 631.416.323 Beath, O. A. Selenium in native range plants occurring on soils derived from Permian or Triassic (?) sediments. *Science* 83, 1936 (104).
- 631.416.323 Byers, H. G. Selenium occurrence in certain soils in the United States with a discussion of related topics. *U.S.D.A. Tech. Bull.* 530, 1936, pp. 78.
- 631.416.323 Byers, H. G.; Williams, K. T.; Lakin, H. W. Selenium in Hawaii and its probable source in the United States. *Indust. Engng. Chem.* 28, 1936 (821-823). C. A. 30 (5704).
- 631.416.323 Farmer's Weekly. Soil poisons conveyed by plants. *Farm. Week, S. Africa* 50, 1936 (1239).
- 631.416.323 Trelease, S. F.; Martin, A. L. Plants made poisonous by selenium absorbed from the soil. *Bot. Rev.* 2, 1936 (373-396). C. A. 30 (6790).
- 631.416.323 Williams, K. T.; Byers, H. G. Selenium compounds in soils. *Indust. Engng. Chem.* 28, 1936 (912-914).
- 631.416.323 Beath, O. A.; Eppson, H. F.; Gilbert, C. S. Selenium distribution in and seasonal variation of type vegetation occurring on seleniferous soils. *J. Amer. Pharm. Assoc.* 26, 1937 (394-405). C. A. 31 (5082).
- 631.416.323 Beath, O. A.; Gilbert, C. S.; Eppson, H. F. Selenium in soils and vegetation associated with rocks of Permian and Triassic age. *Amer. J. Bot.* 24, 1937 (96-101).
- 631.416.323 Byers, H. G. The origin, distribution, and effects of selenium. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (327).
- 631.416.323 Industrial and Engineering Chemistry, News Edition. Selenium toxicity. *Indust. Engng. Chem. News Ed.* 15, 1937 (2). *Trop. Agric.* 14 (247).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.416.323** - Miller, J. T.; Byers, H. G. Selenium in plants in relation to its occurrence in soils. *J. Agric. Res.* 55, 1937 (59-68).
- 631.416.323; 546.22** Hurd-Karrer, A. M. Inhibition of selenium injury to wheat plants by sulphur. *Science* 78, 1933 (560). B.C.A. 53 (215).
- 631.416.323; 546.22** Hurd-Karrer, A. M.; Kennedy, M. H. Inhibiting effect of sulphur in selenized soil on toxicity of wheat to rats. *J. Agric. Res.* 52, 1936 (933-942).
- 631.416.323; 546.22** Franke, K. W.; Page, E. Effect of sulphur additions on seleniferous soils. Binding of selenium by soil. *Indust. Engng. Chem.* 29, 1937 (591-595). C.A. 31 (4754).
- 631.416.323; 546.22** Hurd-Karrer, A. M. Selenium absorption by crop plants as related to their sulphur requirement. *J. Agric. Res.* 54, 1937 (601-608).
- 631.416.323; 619** Franke, K. W.; Rice, T. D. et al. Preliminary field survey of the so-called "alkali disease" of livestock. *U.S.D.A. Circ.* 320, 1934 (1-9). C.A. 29 (1857).
- 631.416.323; 619** Martin, A. L. Toxicity of selenium to plants and animals. *Amer. J. Bot.* 23, 1936 (471-483).
- 631.416.323; 619** Willy, L. Selenium toxic soils. *Nature, Paris*, No. 2991, 15 Dec. 1936 (533-535). F.
- 631.416.323; 619** Moxon, A. L. Alkali disease or selenium poisoning. *S. Dak. Agric. Expt. Sta. Bull.* 311, 1937, pp. 91.
- 631.416.327** Eaton, F. M. Boron in soils and irrigation waters and its effect on plants. With particular reference to the San Joaquin Valley of California. *U.S.D.A. Tech. Bull.* 448, 1935, pp. 131.
- 631.416.4** Levensson, E. Investigations of different methods of determining the potash requirement of the soil and of the changes in solubility and the availability of soil potash. *Thesis, Landt. Hochschule, Berlin*, 1932. *Biol. Zth.* 64, 106. [G.]
- 631.416.4** Abel, F. A. E.; Magistad, O. C. Conversion of soil potash from the non-replaceable to the replaceable form. *J. Amer. Soc. Agron.* 27, 1935 (437-445).
- 631.416.4** Lamb, J., Jr. The availability of soil potassium. *Soil Sci.* 40, 1935 (365-381).
- 631.416.4** Maslova, A. L.; Stoliarova, A. A.; Uvarova, A. V. The distribution of potash in the soil fractions and its assimilation by plants. *Trans. Int. Soc. Soil Sci. Soviet Sect. I*, 1935 (167-184). F.
- 631.416.4** Barbier, G. Potassium and agronomy. *Sta. Cent. Agron. Versailles*, 1936, pp. 41. F.
- 631.416.4** Chaminade, R. The reversion of potassium in soil. *Ann. Agron.* 6 (n.s.), 1936 (818-830). F.
- 631.416.4** Gisliger, L. Investigations on the solubility of soil potash and its uptake by plants. *Bodenk. Pflernähr.* 2, 1936 (23-34). G.
- 631.416.4** Kovalev, Ya. A. Absorbed and replaceable K in soils. *Trudy LOMU* 45, 1936 (85-96). R.e.
- 631.416.4** Thun, R. The solubility of the nutrients potash and phosphoric acid in boiling water. *Bodenk. Pflernähr.* 2, 1936 (34-44). G.
- 631.416.4** Kühn, S. Experiments relative to the determination of readily-assimilable reserves of potash and phosphoric acid in the soil. *Superphosphate* 10, 1937 (121-134).

## FERTILIZERS AND GENERAL AGRONOMY

**631.416.4:Schachtschabel, P.** Uptake of non-exchangeable potash by plants. *Bodenk. Pflernähr.* 3, 1937 (107-133). G.

**631.416.4:Shaw, W. M.; MacIntire, W. H.** The relationship between water-soluble, replaceable and fixed fractions of potash additions to soils. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (143-148).

**631.416.4:631.413.2 Gorbunov, N. I.** Potash adsorption by soils. *Khim. Sotsial. Zemled.* No. 8, 1935 (13-17). R.g.

**631.416.4:631.413.2 Gorbunov, N. I.** The nature of potash fixation in non-exchangeable form. *Khim. Sotsial. Zemled.* No. 2-3, 1936 (82-90). R.

**631.416.4:631.413.2 Joffe, J. S.; Kolodny, L.** Fixation of potassium in soils. *Science* 84, 1936 (232).

**631.416.4:631.415.1 Gisiger, L.** The influence of reaction on the solubility and availability of soil potash. *ForschDienst.* 4, 1937 (314-323). G.

**631.416.4:631.416.2 Joffe, J. S.; Kolodny, L.** Fixation of potassium in soils. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (187-192).

**631.416.4:631.417.2:Paauw, F. v. d.** The potassium problem of the sand and peat soils. *Versl. Rijkslandb.Proefsta. Groningen.* 42A, 1936 (393-448). D.g.

**631.416.4:631.432.3 Rauterberg, E.; Kawe, A.** The mobility of potash salts in soil. *Bodenk. Pflernähr.* 2, 1936 (45-55). G.

**631.416.4:631.432.3 Thomas, W.** The distribution and condition of the potassium in a differently fertilized Hagerstown clay loam soil planted to apple trees in cylinders. *J. Agric. Res.* 53, 1936 (543-546).

**631.416.4:631.81 Dean, H. C.; Smith, F. B.** The effects of potash and crop residues on available potassium in some alkali soils of Iowa. *Proc. Iowa Acad. Sci.* 40, 1933 (96). C.A. 29 (2644).

**631.416.4:631.81 Gilligan, G. M.** The effect of fertilizers and lime upon the electrolysable and exchangeable potash of cropped soil. *J. Agric. Res.* 53, 1936 (61-66).

**631.416.4:631.81 Gilligan, G. M.** The effect of fertilizers and cropping upon the nature and amount of electrolysable bases in the soil with particular reference to potassium. *Del. Agric. Expt. Sta. Bull.* 200 (Tech. No. 17) 1936, pp. 14.

**631.416.4:631.81 Kirsanov, A.** Mobility of K in the soil as affected by fertilizers and plants. *Trudy Guboviz Inst. Udob. Lening. Lab.* 45, 1936 (67-84). R.e.

**631.416.4:631.81 McPhee, K. G.** Some factors affecting the fixation and availability of potash in soils. *Lighter* 6, 1936 (15-16).

**631.416.4:631.811.3 Molchanov, S.** The assimilation of soil potash by plants. *Khim. Sotsial. Zemled.* 6, 1933 (42-48). *Bred. Zbl.* 6 (219).

**631.416.4:631.811.3 Eckstein, O.** Can plants separate the isotopes of soil potash? *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (186-189). G.

**631.416.4:631.811.3 Tyner, E. H.** The feeding power of plants for the potassium in feldspar, exchangeable form, and dilute solution. *Soil Sci.* 39, 1935 (405-422).

**631.416.4:631.821.1 Smolik, L.** Does liming affect the amount of readily available potash in soils. *Vest. Čsl. Akad. Zemld.* 10, 1934 (690-694). [Cze.]



# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.416.4:631.821.1**—Dean, H. C. The effects of liming on the liberation of potassium in some Iowa soils. *Iowa St. Coll. J. Sci.* 10, 1935 (73-75).
- 631.416.4:631.821.1** Dean, H. C. The effects of liming on the liberation of potassium in some Iowa soils. *Iowa Agric. Expt. Sta. Res. Bull.* 197, 1936 (189-208).
- 631.416.4:631.821.1** MacIntire, W. H.; Shaw, W. M., et al. The effects of 18-year residues of lime and magnesia upon the outgo of subsequent additions of potash. *J. Amer. Soc. Agron.* 28, 1936 (202-215).
- 631.416.4:631.821.1** Harris, H. C. Effect of lime on the availability and the fixation of potash in soils. *Soil Sci.* 44, 1937 (265-275).
- 631.416.4:631.824** Vazhenin, I. Fixation of potassium in the soil in an absorbed state in the presence of sodium and magnesium. *Khim. Sotsial. Zemled.* No. 4, 1936 (20-30). R. g.
- 631.416.4:631.83** Chaminade, R. Evolution of potassium in soils. *14th Cong. Chem. Indust. Paris* 1934, pp. 4. C. A. 29 (5969).
- 631.416.4:631.83** Kerefov, K. N. The mobility of K fertilizers in the soil and the chemical character of their interaction with the soil. *Trudy Gektroz Inst. Udob. Leningr. Lab.* 45, 1936 (97-146). R. e.
- 631.416.4:631.86** Lagatu, H.; Maume, L. Demonstration by means of foliar diagnosis of the efficacy of farmyard manure for overcoming potassium inhibition. *C. R. Acad. Agric.* 21, 1935 (396-404). F.
- 631.416.4:631.86** Garola, J. Observations on the exhaustion of the potassium reserves of the soil. *Bull. Assoc. Franç. Ét. Sol* 3, 1937 (135-138). F.
- 631.416.4:633.13**—Boguslawski, E. von. Investigations on soil potash and its uptake and utilization by oats. *Lands. Jahrb.* 83, 1936 (711-771). G.
- 631.416.5:631.547.2** Ratner, E. I. The influence of increasing amounts of exchangeable sodium on the physical properties of the soil and plant growth. *Trans. Int. Soc. Soil Sci. Soviet Sect. 4th Comm.* 1933 (236-237).
- 631.416.5:631.547.2** Itallie, T. B. van. The rôle of sodium in the cation balance of different plants. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (191-194).
- 631.416.7.8** Talybly, G. A. The importance of micro elements and the Ca-Mg ratio for plant growth when liming acid soils. *Zisch. Pflanz. Dung.* 39A, 1935 (257-264). G.
- 631.416.7.8** Shcherbakov, A. P. The effect of different Ca-Mg ratios on the development of plants. *Trudy Nauch. Inst. Udob. No. 130*, 1936 (64-78). R. g.
- 631.416.7.8:631.416.4** Bastisse, E. M. Magnesia in French soils and its relation to lime and potassium. *Ann. Agron.* 6 (n.s.), 1936 (41-64).
- 631.416.7.8:631.547.2** Druzhinin, D. V. The significance of magnesium in fertilizers and in soils to crop yield. *Trans. Int. Soc. Soil Sci. Soviet Sect. 4th Comm.* 1933 (235-236).
- 631.416.7.8:631.547.2** Kreybig, L. v. Occurrence, properties and practical value of magnesia and potash soils in Hungary. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (353-357). G.

# FERTILIZERS AND GENERAL AGRONOMY

**631.416.7,8 : 631.547.2—Delupis, S. D. di.** The physiological antagonism between calcium and magnesium for plant growth. *Ztschr. Pflanz. Düng.* 45, 1936 (296-303).

**631.416.7 Kovda, V. A.** The formation of the secondary carbonates of calcium in soils. *Trans. Dokuchaev Inst. (Gedroiz Mem. Issue)* 9, 1934 (247-253). Rg.

**631.416.7 Kelley, W. P.** Agronomic importance of calcium. *Soil Sci.* 40, 1935 (103-109). B.C.A. 54 (865).

**631.416.7 : 631.458—Williams, Rice.** The rate of loss of exchangeable lime from North Welsh agricultural soils. *Emp. J. Expt. Agric.* 4, 1936 (61-48).

**631.416.7 : 631.461 Castellani, E.** Microorganisms and the polar adsorption of soils in relation to the action of calcium. *Boll. Soc. Int. Microbiol. Sci. Ital.* 7, 1935 (279-281). C.A. 29 (6996).

**631.416.7 : 631.821.1 Koperzhinsky, V. V.; Mikhailov, M. M.** Distribution of lime in the soil of limed meadowland. *Khim. Sotsial. Zool.* No. 3, 1937 (7-15). R.

**631.416.7 : 631.83 Lemmermann, O.; Fresenius, L.** The influence of some potash fertilizers and their components on the lime status of the soil. *Ztschr. Pflanz. Düng.* 40, 1935 (189-199). G.

**631.416.8 Slater, C. S.; Holmes, R. S.; Byers, H. G.** Trace elements in the soils from the erosion experiment station with supplementary data on other soils. *U.S.D.A. Tech. Bull.* 552, 1937, pp. 21.

**631.416.8 Van Derlinden, L.** Metals in soils, fertilizers and foods. *Amo. Fert.* 86, March 6, 1937 (7-8, 20, 21).

**631.416.846 Bastisse, E. M.** Distribution of magnesium in arable soil. *Bull. Assoc. Franç. Ét. Sol* 2, 1936 (100-105). [F.]

**631.416.846 : 631.415.1 Süchting, H.; Jessen, W.; Maurmann, G.** Notable weathered soils of Devonian type in Taunus and Hunsrück. *Isdenk. Pflanz.* 4, 1937 (121-137). B.C.A. 56 (1095). G.

**631.416.847 Alben, A. O.; Boggs, H. M.** Zinc content of soils in relation to pecan rosette. *Soil Sci.* 41, 1936 (329-332).

**631.416.856 Prát, S.; Komarek, K.** Copper in soils and plants in copper-rich areas. *Stav. Masaryk. Akad. Práce* 8, 1934 (1-16). *Chem. Zbl.* ii, 1935 (870). B.C.A. 55 (897).

**631.416.856 Manns, T. F.; Russell, R.** Analysis of soils for copper. *Del. Agric. Expt. Sta. Bull.* 192 (Ann. Rept. 1934), 1935 (50-51). C.A. 30 (555).

**631.416.856 Willis, L. G.; Piland, J. R.** The function of copper in soils and its relation to the availability of iron and manganese. *J. Agric. Res.* 52, 1936 (467-476).

**631.416.871.1 Steenbjerg, F.** Investigations concerning the manganese content in Danish soil. II. The exchangeable manganese and its dependence on added manganese and reducing agents. *Tidsskr. Planteavl* 40, 1934 (337-371). [D.a.e.]

**631.416.871.1 Leeper, G. W.** Soil and manganese deficiency. *J. Aust. Inst. Agric. Sci.* 1, 1935 (161-163). B.C.A. 55 (340).

**631.416.871.1 Steenbjerg, F.** Investigations concerning the manganese content of Danish soil. III. On the relationship between the growth of plants and the amount of exchangeable manganese in the soil. *Tidsskr. Planteavl* 40, 1935 (795-824). [D.a.e.]

## BIBLIOGRAPHY OF SOIL SCIENCE

- 631.416.871.1** - Blair, A. W.; Prince, A. L. Manganese in New Jersey soils. *Soil Sci.* 42, 1936 (327-333).
- 631.416.871.1** - Pelíšek, J. The chemical composition of the iron- and manganese-containing concretions of Moravian glei soils. *Sborn. Čsl. Akad. Zvěd.* 11, 1936 (73-77). Czg.
- 631.416.871.1** : **619** Svanberg, O. Agricultural chemical factors leading to anaemic conditions with local occurrence in northern Sweden. *Lantbrukshögsk. Ann.* 1, 1934 (209-250). C.A. 29 (6686).
- 631.416.872** : **631.433.2** Iyengar, B. A. S. Iron mobilization and plant growth in water-logged soils. *Proc. Soc. Biol. Chem. India* 1, 1936 (32-33).
- 631.416.873** : **619** Underwood, E. J.; Filmer, J. F. Enzootic marasmus. The determination of the biologically potent element (cobalt) in limonite. *Aust. Vet. J.* 11, 1935 (84-92).
- 631.416.873** : **619** Askew, H. O.; Dixon, J. K. The importance of cobalt in the treatment of certain stock ailments in the South Island, New Zealand. *N.Z. J. Sci. Tech.* 18, 1936 (73-92).
- 631.416.873** : **619** Patterson, J. B. E. Cobalt and sheep diseases. *Nature* 140, 1937 (363).
- 631.416.873** : **619** Wunsh, D. S. Tracking down a deficiency disease. *Chem. Indust.* 56, 1937 (855-859).
- 631.416.882.1** Salminen, A. On the titanium content of clays. *Suomen Kem.* 9A, 1936 pp. 4. Fre.
- 631.416.888.1** Hiral, K. Rarer elements in soils. I. Vanadium content in soils. *J. Sci. Soil Japan* 11, 1937 (279-283). J.c.

## 631.417 SOIL ORGANIC MATTER

- 631.417** Scholz, W. The carbon economy of the soil. *Forsch.-Dienst.* 2, 1936 (434-450). G.
- 631.417** : **525.5** Franchini, R. Variations in the soil's organic matter content during the vegetation of cereals. *Ist. Agrar. Pisa Boll.* 11, 1935 (584-606). I.
- 631.417** : **541.134.5** Burrows, W.; Cordon, T. C. The influence of the decomposition of organic matter on the oxidation-reduction potential of soils. *Soil Sci.* 42, 1936 (1-10).
- 631.417** : **546.711** Iyer, C. R. H.; Rajagopalan, R.; Subrahmanyam, V. Investigations on the rôle of organic matter in plant nutrition. X. Influence of different forms of manganese on the oxidation of organic matter and release of plant nutrients. *Proc. Indian Acad. Sci.* 2, 1935 (108-135).
- 631.417** : **546.711** Siddappa, G. S.; Subrahmanyam, V. Investigations on the rôle of organic matter in plant nutrition. Part IX. Oxidation of organic matter in the soil and plant assimilation. *Proc. Indian Acad. Sci.* 1, 1935 (927-937).
- 631.417** : **577.17** Virtanen, A. I. On the power of plants to take up soil organic matter. *Nord. JordbrForsk.* 5, 7, 1935 (203-213). Sw.
- 631.417** : **581.144.2** Weaver, J. E.; Houghton, V. H.; Weldon, M. D. Relation of root distribution to organic matter in prairie soil. *Bot. Gaz.* 96, 1935 (389-420).
- 631.417** : **581.5** Wasowicz, T. Investigations on mountain soils. *Polska Akad. Um. Prace Roln.-Leśne*, No. 7, 1933, pp. 46.

# FERTILIZERS AND GENERAL AGRONOMY

**631.417:631.413.4** Millar, H. C.; Smith, F. B.; Brown, P. E. The base exchange capacity of decomposing organic matter. *J. Amer. Soc. Agron.* 28, 1936 (753-766).

**631.417:631.413.4** Prince, A. L.; Toth, S. J. Electroanalysis and cation exchange studies on soils of varying organic matter content. *Soil Sci.* 43, 1937 (205-217).

**631.417:631.414** Aleshin, S. N. The peptisation of soils and the separation of the organic fraction of the soil-absorbing complex. *Khim. Sotsial. Zemled.* No. 12, 1934 (65-69). C.A. 30 (797).

**631.417:631.414** Tiulin, A. F. Organic colloids in the soil. *Khim. Sotsial. Zemled.* No. 8, 1934 (10-17). *Pedology* 1936 (158).

**631.417:631.416** McKibbin, R. R.; Snell, J. F.; Dyck, A. W. J. The condition of the nitrogen, phosphorus and sulphur of soil organic matter. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (419-421).

**631.417:631.416.1** Virtanen, A. I.; Hausen, S. Organic nitrogen compounds as plant nutrients. *Swedish Kem.* 613, 1933 (55-56). B.C.A. 52 (243).

**631.417:631.416.1** Remesov, N. P.; Wierigina, K. W. The characteristics of organic matter in the soils of the U.S.S.R. Part 3. Phases of soil organic nitrogen. *Zschr. Pflanz. Düng.* 36A, 1934 (37-52). [G.]

**631.417:631.416.1** Millar, H. C.; Smith, F. B.; Brown, P. E. The influence of organic matter on nitrate accumulation and the base exchange capacity of Dickinson fine sandy loam. *J. Amer. Soc. Agron.* 25, 1936 (856-866).

**631.417:631.432.3** Havis, L.; Gourley, J. H. Soil organic matter and porosity of an orchard soil under different cultural systems. *Soil Sci.* 43, 1937 (413-420).

**631.417:631.432.3** Smith, F. B.; Brown, P. E.; Russell, J. A. The effect of organic matter on the infiltration capacity of Clarion loam. *J. Amer. Soc. Agron.* 29, 1937 (521-525).

**631.417:631.452** Stöckli, A. Humus as a bearer of soil fertility. *Schweiz. Landw. Monatsh.* 12, 1934 (40). Z.P.D. 37 (119). [G.]

**631.417:631.452** Piland, J. R.; Willis, L. G. The stimulation of seedling plants by organic matter. *J. Amer. Soc. Agron.* 29, 1937 (324-331).

**631.417:631.461.1.3** Tiurin, I. V. Studying the biological aspect of soil organic matter. *Trans. Dokuchaei. Inst.* 10, 1934 (27-37). B.C.A. 54 (36).

**631.417:631.461.1.3** Bell, C. E. Rate of decomposition of organic matter in Norfolk sand as measured by the formation of carbon dioxide and nitrates. *J. Agric. Res.* 50, 1935 (717-730). *Herb. Abstr.* 5 (272). E.S.R. 73 (752).

**631.417:631.461.1.3** Jensen, H. L. Contributions to the microbiology of Australian soils. IV. The activity of microorganisms in the decomposition of organic matter. *Proc. Linn. Soc. N.S.W.* 61, 1936 (27-55). In *Sydney Univ. Repts. Ser. I*, Vol. 2, 1936.

**631.417:631.461.1.3** Millar, H. C. The decomposition of some humus-forming materials in soils. *Univ. St. Coll. J. Sci.* 11, 1936 (87-88). Thesis.

**631.417:631.461.1.3** Rippel, A. New microbiological observations on humus formation and humus decomposition. *Forsch.Dienst.* 2, 1936 (83-88). [G.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.417: 631.461.1.3**—Vartiavaara, U. The decomposition of organic matter in soil. *Maat. Aikak.* 8, 1936 (210-226). [Fie.]
- 631.417: 631.58**—Wheeting, L. C. Changes in organic matter in Western Washington soils as a result of cropping. *Soil Sci.* 44, 1937 (139-149).
- 631.417: 631.582**—Crowther, E. M. Soil organic matter and crop rotation. *Emp. Coll. Grow. Corp. 2nd Conf. Rept.* 1934 (319-329).
- 631.417: 631.81**—Block, T. The influence of cultivated plants, manuring, and acidity on the C: N ratio and the chemical composition of organic substances in soil. *Rocz. Nauk Roln.* 29, 1933 (271). Z.P.D. 31A (370).
- 631.417: 631.81**—Springer, U. How does the influence of manuring affect soil organic matter, and how can it be determined? *Ztschr. Pflanz. Düng.* 42, 1936 (303-322). [G.]
- 631.417: 631.81**—Turk, L. M.; Millar, C. E. The effect of different plant materials, lime, and fertilizers on the accumulation of soil organic matter. *J. Amer. Soc. Agron.* 28, 1936 (310-324).
- 631.417: 631.811**—Bhagvat, K.; Narayanayya, Y. V.; Subrahmanyam, V. Investigations on the rôle of organic matter in plant nutrition. Part I. Some chemical aspects of the oxidation of soil organic matter. *Proc. Indian Acad. Sci.* 1, 1934 (49-72).
- 631.417: 631.811**—Iyer, C. R. Harihara; Rajagopalan, R.; Subrahmanyam, V. Investigation on the rôle of organic matter in plant nutrition. II. Oxidizing agents as fertilizers. *Proc. Indian Acad. Sci.* 1, 1934 (106-122).
- 631.417: 631.811**—Virtanen, A. I.; Hausen, S. Utilization of organic compounds by plants. *Acta Chem. Fenn.* 713, 1934 (97). B.C.A. 54 (199).
- 631.417: 631.811**—Iyer, C. R. H.; Siddappa, G. S.; Subrahmanyam, V. Investigations on the rôle of organic matter in plant nutrition. VI. Effect of injecting minute quantities of certain forms of organic matter on plant growth and reproduction. *Proc. Indian Acad. Sci.* 1, 1935 (381-404).
- 631.417: 631.811**—Narasimhamurthy, G.; Subrahmanyam, V. Investigations on the rôle of organic matter in plant nutrition. VII. Economy of carbon during decomposition of cane molasses in the swamp soil. *Proc. Indian Acad. Sci.* 1, 1935 (823-836).
- 631.417: 631.811**—Titta, G. Practical experiments on demonstration fields. Content of organic matter in the soils and production of grain. *Ist. Agrar. Pisa Boll.* 11, 1935 (245-363). [I]
- 631.417.2**—Arnold, C. L.; Lowry, A.; Reinhardt, T. Isolation and study of the humic acids from peat. *Bur. Mines Rept. Investig.* No. 3258, 1934, pp. 9. C.A. 29 (1923).
- 631.417.2**—Dragunov, S. S. Black soil fertilization. *Vsp. Khim.* 3, 1934 (988-1000). C.A. 29 (5975).
- 631.417.2**—Aarnio, B. On the factors acting upon the qualities of the humus-containing layer of natural soils. *Maat. Aikak.* 7, 1935 (73-84).
- 631.417.2**—Antipov-Karataev, I. N.; Khainsky, I. A. Study of humate formation by electrochemical methods. *Doklady Inst. Studies Genesis Geography Soils*, 1935 (187-212). C.A. 30 (5341). B.C.A. 54 (1106).

# FERTILIZERS AND GENERAL AGRONOMY

- 631.417.2—Dragunov, S. S. The characterization of humic acids from the standpoint of the contents of carboxyl and hydroxyl groups and nitrogenous compounds. *Trudy Nauch. Inst. Udob.* 1935 (83-95). [G.]
- 631.417.2—Lang, R. Classification of forms of humus. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (368-373). [G.]
- 631.417.2—Orlov, N.; Ivanov, I. Humus studies. VIII. Formation of humic matter by decomposition of oleic acid and mineral oils. *Zh. Prikl. Khim.* 8, 1935 (903-908). *Pedology* 1936 (896). [R.]
- 631.417.2—Orlov, N.; Tishchenko, V.; Tarassenkova, E. Berginization and oxidation of humic acids of different kinds of peat. *Zh. Prikl. Khim.* 8, 1935 (501-504). *Pedology*, 1936 (895). [R.]
- 631.417.2 Scheele, W.; Schulze, W.; Spandau, H. Humic acids. *Kolloid-Ztschr.* 72, 1935 (301-312). [G.]
- 631.417.2—Springer, U. The place of humic acid in the chemistry of humus. *Ztschr. Pflanz. Düng.* 37, 1935 (202-204). [G.]
- 631.417.2—Stadnikoff, G.; Ssyskoff, K.; Uschakova, A. Humic acids. *Kolloid-Ztschr.* 71, 1935 (206-214). [G.]
- 631.417.2—Waksman, S. A. Chemical nature of organic matter or humus in soils, peat bogs and composts. *J. Chem. Educ.* 12, 1935 (511-519).
- 631.417.2—Waksman, S. A. The place of humic acid in the chemistry of humus. *Ztschr. Pflanz. Düng.* 37, 1935 (52-55). [G.]
- 631.417.2 Zeile, K. Humic acids. *Kolloid-Ztschr.* 72, 1935 (211-212). *C.A.* 29 (8196). [G.]
- 631.417.2 Enders, C.; Fries, G. The analogy of melanoid and humic acids. *Kolloid-Ztschr.* 76, 1936 (289-291). [G.]
- 631.417.2 Scheele, W.; Steinke, L. On humic acids. IV. *Kolloid-Ztschr.* 77, 1936 (312-320). [G.]
- 631.417.2 Sedletsy, I. Humus as a natural material and humic acid as its basic expression. *Khim. Sotsial. Zemled.* No. 11, 1936 (77-87). [R.]
- 631.417.2—Springer, U. Modern methods of humus investigation and its application to agricultural and soil problems. *Forsch.-Dienst.* 2, 1936 (73-79). [G.]
- 631.417.2—Boutaric, A.; Thévenet, S. Physico-chemical researches on humus colloids. *Ann. Agron.* 7 (n.s.) 1937 (18-32). [F.]
- 631.417.2—Hock, A. Further investigation on the humus characterization of soils. *Bodenk. Pflernähr.* 5, 1937 (1-24). [G.]
- 631.417.2—Scheele, W. Contribution to the characterization of natural humus. *Kolloid Beih.* 46, 1937 (368-424). [G.]
- 631.417.2: 541.18.04—Kurtesov, A. P.; Rabinovich, S. A. Coagulation of humate salts by electrolytes. *Trudy Geoloz. Inst. Udob. Leningr. Lab.* No. 36, 1935 (7-24). [R.]
- 631.417.2: 541.18.04—Apushkin, K. K. The study of the coagulation of ammonia extracts of humus. *Trudy Nauch. Inst. Udob.* No. 127, 1936 (36-51). [R.g.]
- 631.417.2: 546.22—Vinokurov, M. A. The sulphur content of soil organic matter and a method for its extraction. *Pedology* No. 4, 1937 (493-504). [R.e.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.417.2:547.458.84**—Rudge, E. A.; Lewis, H. Studies in old timber. 3. Post-Neolithic. *J. Soc. Chem. Indust.* 54, 1935 (433T-434T). *Biol. Abs.* 10 (2297).
- 631.417.2:547.458.84** Scheffer. Investigations of the lignin and lignin-protein complex. *Chem.-Ztg.* 59, 1935 (826). *Jahrb. Moerk.* 1936 (78).
- 631.417.2:547.458.84**—Sedletsy, I. D.; Brunovsky, B. K. Synthesis of humic acids and their relation to lignin and coal. *C.R. Acad. Sci. (U.S.S.R.)* 4, 1935 (279-281).
- 631.417.2:547.458.84**—Sedletsy, I. D.; Brunovsky, B. K. The synthesis of humic acid and its structural relationship to lignin and coal. *Trans. Int. Soc. Soil Sci. Soviet Sect. A*, 1935 (91-96). [G.]
- 631.417.2:547.458.84** Feustel, I. G.; Byers, H. G. The behaviour of lignin and humic acid preparations toward a bromination treatment. *Soil Sci.* 42, 1936 (11-21).
- 631.417.2:547.458.84** Sedletsy, I. D. The theory of crystallization of humic acid and the structure of free carbon. *Trudy Lomonosov. Inst. Geokhim.* 8, 1936 (61-70). [R.]
- 631.417.2:553.97** Arnold, C. L.; Lowry, A.; Thiessen, R. Isolation and investigation of humic acid from peat. *Fuel* 14, April 1935. *Jahrb. Moerk.* 1936 (72).
- 631.417.2:620.19** Rodt, R. V. What are "soil acid" and "moor acid"? *Chem.-Ztg.* 60, 1936 (593). *B.C.A.* 55 (897). [G.]
- 631.417.2:631.411.3** Barbier, G. The effect of humic colloids on certain physical properties of clay soils. *Ann. Agron.* 5 n.s., 1935 (765-780). [F.]
- 631.417.2:631.416** Prozorovskaia, A. A. The effect of humic acids and their derivatives on the nitrogen, phosphate, potash and iron available to plants. *Trudy Nauch. Inst. Udob.* No. 127, 1936 (143-161). [R.]
- 631.417.2:631.416.1** Dragunov, S. S.; Bakhtina, E. F. Nitrogenous constituents of natural humic acids. *Zh. Prikl. Khim.* 8, 1935 (919-925). *B.C.A.* 54 (1059).
- 631.417.2:631.416.1** Dyck, A. W. J.; McKibbin, R. R. The non-protein nature of a fraction of soil organic nitrogen. *Canad. J. Res.* 13B, 1935 (264-268).
- 631.417.2:631.416.1** De, P. K.; Pain, A. K. Studies on the organic nitrogen of paddy soils. Part I. Distribution of "humic" and "non-humic" nitrogen in organic matter. *Indian J. Agric. Sci.* 6, 1936 (1081-1086).
- 631.417.2:631.416.1**—Dragunov, S. S.; Bakhtina, E. F. Nitrogenous constituents of natural humic acids. *Trudy Nauch. Inst. Udob.* No. 127, 1936 (19-25). [R.]
- 631.417.2:631.416.1**—Dragunov, S. S.; Bakhtina, E. F. The solubility of humic acids in relation to the nitrogen compounds of different peats. *Trudy Nauch. Inst. Udob.* No. 127, 1936 (26-35). [R.]
- 631.417.2:631.416.872** Iyengar, B. A. S.; Subrahmanyam, V. Investigations on the rôle of organic matter in plant nutrition. Part VIII. Influence of fermentable organic matter on the transformations of iron in the swamp soil. *Proc. Indian Acad. Sci.* 1, 1935 (868-892).
- 631.417.2:631.416.872** Vishniakov, A. P.; Rabinovich, S. A. Influence of soil organic acids on iron mobility. *Trudy Gedroiz. Inst. Udob. Leningr. Lab.* No. 36, 1935 (25-59). [R.]

## FERTILIZERS AND GENERAL AGRONOMY

**631.417.2 : 631.445—Schmuziger, A.** Distribution and chemistry of humus in the profiles of some Swiss soil types. *Thesis Tech. Hochsch. Zurich* 1935, pp. 123. G.

**631.417.2 : 631.445—Waksman, S. A. ; Hutchings, I. J.** Chemical nature of organic matter in different soil types. *Soil Sci.* 40, 1935 (347-363).

**631.417.2 : 631.445—Smolík, L.** Humification in the climatogenetical soil types. *Sborn. Čsl. Akad. Zeměd.* 11, 1936 (93-101). (Cze.)

**631.417.2 : 631.445.1—Pozdena, L.** Investigations on the formation of the organic components of humus soils with special reference to colorimetric methods. *Bodenk. PflErnähr.* 2, 1936 (55-73). G.

**631.417.2 : 631.445.2—Motkin, V. M.** The chemical composition of the humus of turf-podzol soils. *Khim. Sotsial. Zemled.* No. 12, 1936 (78-82). R.]

**631.417.2 : 631.445.2—Sallans, H. R. ; Snell, J. M. ; MacKinney, H. W., et al.** Water-soluble acid substances in the raw humus of podzol soils. *Canad. J. Res.* 15, 1937 (315-320).

**631.417.2 : 631.51—Reinaw, E. H.** The humus supply of our cultivated soils. *Zuckerind. 15*, 1933 (58-61, 79-85). *Bied. Zbl.* 65 (210). G.

**631.417.2 : 631.51—Simon, K. ; Schmidt, A.** On the influence of cultivation methods on the soluble humus constituents of peat (Niederungsmoor) soils. *Ernähr. Pflanze* 31, 1935 (81-86). G.

**631.417.2 : 631.811—Anne, P.** The influence of humic matter in soils on the mineral nutrition of plants. *Cong. Chim. Indust. 14th Cong. Paris*, Oct. 1934, pp. 5. C.A. 29 (5577).

**631.417.2 : 631.811—Blagoveshchensky, A. V. ; Porosorovskaya, A. A.** Influence of humic acid on the absorption of mineral salts by plants. *Biochem. Ztschr.* 274, 1934 (341-345). C.A. 29 (1134). G.

**631.417.2 : 631.811—Horner, C. K. ; Burk, D. ; Hoover, S. R.** Preparation of humate-iron and other humate metals. *Plant Physiol.* 9, 1934 (663-669). B.C.A.A. 1934 (1421).

**631.417.2 : 631.811—Greening, C. B.** Oxidation of soil humus. *J. Roy. Hort. Soc.* 41, 1936 (369-373).

**631.417.2 : 631.811—Niklewski, B. ; Wojciechowski, J.** The effect of water-soluble humic matter on the development of some cultivated plants. *Bodenk. PflErnähr.* 4, 1937 (294-327). G.]

**631.417.2 : 631.85—Vishniakov, A. P.** Action of humic acid and humates on difficultly soluble phosphates. *Trudy Gdoviz. Inst. Udob. Leningr. Lab.* No. 36, 1935 (60-81). R.]

**631.417.2 : 631.86—Havis, L. ; Gourley, J. H.** Some relationships of cultural systems to soil organic matter. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (99-102). C.A. 30 (7749).

**631.417.2 : 631.86—Simon, K.** Typical organic matter, its estimation and its significance in farmyard manures. *Bodenk. PflErnähr.* 1, 1936 (257-301). G.]

**631.417.4—Dhar, N. R.** The constancy of the ratio of carbon to nitrogen in natural systems undergoing oxidation and the problem of protein synthesis. *J. Indian Chem. Soc.* 11, 1934 (883-891).

**631.417.4—Dhar, N. R.** The stability of the carbon-nitrogen ratio in natural systems at the onset of oxidation and the problem



## BIBLIOGRAPHY OF SOIL SCIENCE

of nitrogen accumulation in a dry climate. *Ztschr. Pflanz. Dung.* 39, 1935 (170-178).

**631.417.4:581.5—Hosking, J. S.** The carbon-nitrogen ratios of Australian soils. *Soil Res.* 4, 1935 (253-268).

**631.417.4:581.5—Kivinen, E.** Plant-nutrient contents of moorland plants. *Maat. Julk.* 27, 1935 (1-123). B.C.A. 55 (384).

**631.417.4:631.436—Dhar, N. R.; Mukerji, S. K.** Influence of temperature on the carbon-nitrogen ratio of soils. *J. Indian Chem. Soc.* 12, 1935 (436-440).

**631.417.4:631.445—Gorshenin, K. P.** Carbon dioxide and nitrogen in Siberian soils. *Trudy Omsk. Inst. S Kh.* 1, No. 3, 1935 (3-29). R. g.

**631.417.4:631.452—Wad, Y. D.; Aurangabadkar, R. K.** Nitrogen and carbon status in relation to soil productivity. *Proc. Nat. Inst. Sci. India* 3, 1937 (271-286).

**631.417.4:631.461.1.3—Khan-Denkho.** The effect of organic substances with different C: N ratios on nitrogen mobilization in differently textured soils. *Khim. Sotsial. Zemled.* No. 2, 3, 1936 (97-103). R.

**631.417.4:631.461.1.3—Millar, H. C.; Smith, F. B.; Brown, P. E.** The rate of decomposition of various plant materials in soils. *J. Amer. Soc. Agron.* 28, 1936 (914-923).

**631.417.4:631.51—Vinokurov, M. A.** Relation of carbon to total nitrogen in Siberian soils. *Pedology* No. 5, 1936 (674-692). R.

**631.417.4:631.58—Metzger, W. H.** Nitrogen and organic carbon of soils as affected by crops and cropping systems. *J. Amer. Soc. Agron.* 28, 1936 (228-233).

**631.417.4:631.81—Kamerman, P.; Klintworth, H.** Influence of fertilizers on the nitrogen and carbon cycles in soils. Experiments carried out on the red loam of the Zebediela area, Northern Transvaal. *S. Afric. Dept. Agric. Sci. Bull.* 137 (Chem. Ser. 134) 1934, pp. 26.

**631.417.4:631.81—Greaves, J. E.; Hirst, C. T.** Influence of rotation and manure on the nitrogen, phosphorus, and carbon of the soil. *Utah Agric. Expt. Sta. Bull.* 274, 1936, pp. 15. E. S. R. 76 (759).

**631.417.749.18—Ichikawa, C.** Isolation of cyanuric acid from the soil of Kagamigahara. *J. Agric. Chem. Soc. Japan* 12, 1936 (898-899). C.A. 31 (1139).

## 631.418 SOIL SOLUTION

**631.418—Rund, O.** Obtaining the soil solution by water displacement, as compared with the natural expressed solution by von Wrangell's method. *Thesis, Hohenheim*, 1933. B.C.A. 54 (372). G.

**631.418:541.134.5—Meyer, L.** Physicochemical study of soils. Plant growth and apparent pH. *Arch. Phys. Biol.* 11, 1934 (191-192). C.A. 29 (266).

**631.418:581.5—Stelner, M.** Ecology of salt marshes in north-east U.S.A. Osmotic ratios of soils as a factor in plant distribution. Ecology of osmotic values and chemistry of cell sap in halophytes. *Jahrb. Wiss. Bot.* 81, 1934 (94-202). C.A. 29 (7386).

## FERTILIZERS AND GENERAL AGRONOMY

**631.418 : 631.416**—Galvez, N. L. Soil solution and root-soluble plant nutrients. *J. Landw.* 82, 1934 (257-288). [G.]

**631.418 : 631.445.5**—Dunnewald, T. J. Soil solution changes in the arid profile. *Amer. Soil Surv. Bull.* 16, 1935 (93-96).

**631.418 : 631.472**—Kozłowski, A. A chemical analysis of soil solution from various horizons of a soil profile. *Rocz. Nauk Roln.* 36, 1936 (68-83). [Ple.]

**631.418 : 631.547.2**—Aslander, A. Soil extract as nutrient solution for cultivated plants. *Ztschr. Pflanz. Düng.* 44, 1936 (282-306). [G.]

**631.418 : 631.81**—Ross, W. H.; White, L. M. Influence of fertilizers on the concentration of the soil solution. II. *Amer. Fert.* 87, Oct. 2, 1937 (9).

**631.418 : 631.81**—White, L. M.; Ross, W. H. Influence of fertilizers on the concentration of the soil solution. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (181-186).

**631.418.005**—Krügel, C.; Dreyspring, C.; Heinz, W. Experiments carried out by the Hamburg Experimental Station. 39. A new suction apparatus for the complete separation of the soil solution from the soil itself. *Superphosphate* 8, 1935 (101-108).

## 631.42 EXPERIMENTAL TECHNIQUE

**631.42**—Antipov-Karataev, I. N. A complex method for investigating the physical, chemical and agrochemical characteristics of Transvolga soils in connection with irrigation. *C.R.Acad. Sci. (U.S.S.R.)* Nov. 1933 (18-66).

**631.42**—Behrens, W. U. Fluctuations in yields in pot experiments. *Ztschr. Pflanz. Düng.* 36A, 1934 (348-353). [G.]

**631.42**—Gericke, S.; Pfarre, E. The calculation of the nutrient effect in fertilizer experiments. *Phosphorsäure* 4, 1934 (749-757). [G.]

**631.42**—Chelladinov, G. I. Pot experiment methods. *Vitim* No. 129, 1936 (53-64). [R.e.]

**631.42**—Delforge, A. Soil analysis in practical agriculture. *Inst. Belge Amélior. Better. Pub.* 6, 1935 (407). [F.]

**631.42**—Dillewijn, C. v. Pot tests in investigations on fertilizer problems. *Meded. Cherbon Expt. Sta.* 76, 1935. *Int. Sug. J.* 38 (107).

**631.42**—Drosdoff, M.; Truog, E. A method for removing iron oxide coatings from minerals. *Amer. Min.* 20, 1935 (669-673).

**631.42**—Link, K. K. The Chicago soil-nutrient-temperature tank. *Science* 81, 1935 (204-207).

**631.42**—Miklaszewski, S. Pedological notes. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (318-321). [F.]

**631.42**—Scurti, F. Modern methods of estimating and increasing the productive capacity of soils. *5th Cong. Chim. Pura ed Appl. Sardinia* 1935, pp. 52.

**631.42**—Zhukov, M. S.; Dmitrieva, A. P. The influence of the time of year at which soil samples were taken and the length of storage on results of agrochemical analyses. *Trudy VIUA* No. 5, 1934 (37-62). *Pedology* 1935 (928). [R.]

**631.42**—Chippindale, H. G.; Milton, W. E. J. Notes on the sampling of soil to determine the content of buried seeds. *Herb. Revs.* 4, 1936 (12.)

# BIBLIOGRAPHY OF SOIL SCIENCE

**631.42 -Jewell, W. R.** The analysis of soils. Directions for taking samples. *J. Dept. Agric. Victoria* 34, 1936 (553).

**631.42 -Protasov, P. V.** The use of composite soil samples to characterize the soil conditions of an experimental field. *Bull. SoiusNIKht*, No. 2, 1936 (9-28). (R.)

**631.42 -Scholz, W.** The purification of Hohenbockaer quartz sand for carrying out nutrient requirement tests. *Ztschr. Pflanz-Dung.* 43, 1936 (8-5). (G.)

**631.42 -Withrow, R. B.; Biebel, J. P.** Sub-irrigation method of supplying nutrient solutions to plants growing under commercial and experimental conditions. *J. Agric. Res.* 53, 1936 (693-701). B.C.A. 36 (376)

**631.42 Youden, W. J.; Zimmerman, P. W.** Field trials with fibre pots. *Boyce Thompson Inst. Contr.* 8, 1936 (317-331).

**631.42 -Chapman, J. E.** The value of added water data in testing fertilizer requirements of soil. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (259-260)

**631.42 -Hock, A.** Factors determining success in the conduct of soil investigations for practical farmers. *Lincoln. Pflanz.* 33, 1937 (129-133). (Gesp.)

**631.42 Leake, H. M.** Soil science and the practice of agriculture. *Trop. Agric. Trin.* 14, 1937 (125-128).

**631.42 Youden, W. J.; Mehlich, A.** Selection of efficient methods for soil sampling. *Boyce Thompson Inst. Contr.* 9, 1937 (59-70).

**631.42 : 535.82 Kubiena, W.** The use of the microscope in soil investigation. *Lincoln. Pflanz.* 33, 1937 (61-65). (Gesp.)

**631.42 : 553.97 Longley, L. E.** The value of peat in a potting soil mixture. *Proc. Amer. Soc. Hort. Sci.* 32, 1935 (639-644).

**631.42 : 581.144.2 Jones, L. H.; Haskins, H. D.** Distribution of roots in porous and nonporous plant containers. *Plant Physiol.* 10, 1935 (511-519). (C.A. 29, 7398)

**631.42 : 581.144.2 Spirhanzl, J.** An experiment for determining the depth and kind of development of the root-system of plants. *Strom. Cg. Akad. Zool.* 11, 1936 (298-303). (Geg.)

**631.42 : 581.144.2 Bates, G. H.** A device for the observation of root growth in the soil. *Nature.* 149, 1947 (966-967).

**631.42 : 581.144.2 Blaser, R. E.** A rapid quantitative method of studying roots growing under field conditions. *J. Amer. Soc. Agron.* 29, 1937 (421-423).

**631.42 : 581.144.2 Pavlychenko, T. K.** The soil-block washing method in quantitative root study. *Canad. J. Res.* 15, 1937 (33-57).

**631.42 : 631.432.2 Rav, I.** Regulating the water content in pot experiments. *Pflanzenbau* 11, 1934 (187). Z.P.D. 42 (121).

**631.42.005 Khoroshavin, B. P.** Methods of soil sampling for chemical purposes. *Strom. Rab. Perm. S. Kh. Inst.* 1934 (103-134). *Pedology* 1936 (913). (R.)

**631.42.005 -Lödödesöl, A.** A new instrument for soil sampling. *Soil Sci.* 39, 1935 (257-259).

**631.42.005 Colle, T. S.** Soil samplers. *Soil Sci.* 42, 1936 (139-142).

**631.42.005 Heyward, F.** Soil sampling tubes for shallow depths. *Soil Sci.* 41, 1936 (357-360).

## FERTILIZERS AND GENERAL AGRONOMY

- 631.42.005**—Itano, A. Spontaneous studies of soils. I. A method for collecting the soil samples to be studied in the laboratory. *Ber. Öhara Inst.* 7, 1936 (289-291).
- 631.42.005**—Mitscherlich, E. A.; Beutelspacher, H. A boring tool for volumetric sampling of soils at optional depths. *Ztschr. Pflanz. Düng.* 44, 1936 (310-315). [G.]
- 631.42.005**—Cole, R. C.; Retzer, J. L. A soil auger for dry soils. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (305-306).
- 631.42.005**—Eddins, A. H.; Scoville, W. H. Sampling soil for the pH determination. *Soil Sci.* 43, 1937 (219-220).
- 631.42.005**—Joachim, A. W. R. Soil sampling. *Trop. Agricul.* 88, 1937 (213-215).
- 631.42.005**—Puri, A. N.; Sarup, A. The use of collapsible tubes for storing soil samples for moisture estimation. *Soil Sci.* 43, 1937 (375-376).
- 631.42.005**—Salminen, A. A handy borer for soil surveyors. *Soil Sci.* 43, 1937 (377-378).
- 631.42.005**—Stoeckeler, J. H. A new jack for pulling soil-sampling tubes. *Soil Sci.* 43, 1937 (379-381).

### 631.421 FIELD EXPERIMENTS

- 631.421**—Kristensen, R. K. Mean errors in calculating results of field experiments. *Nord. JordbrForsk.* 1934 (286-291). [Da.]
- 631.421**—Michels, C. A.; Schwendeman, J. Determining yields on experimental plots by the square yard method. *J. Amer. Soc. Agron.* 26, 1934 (993-1001).
- 631.421**—Summerby, R. The value of preliminary uniformity trials in increasing the precision of field experiments. *Macdonald Agric. Coll. Tech. Bull.* 15, 1934, pp. 64.
- 631.421**—Wishart, J. Analysis of variance and analysis of covariance, their meaning and their application in crop experimentation. *Emp. Coll. Grow. Conf. 2nd Conf. Rept.* 1934 (83-89).
- 631.421**—Bachér, I. Lay-out of complex experiments. *Nord. JordbrForsk.* 5 7, 1935 (329-342). [Sw.]
- 631.421**—Bose, R. D. Serial experiments. *Agric. Live-Stk. India* 5, 1935 (728-741).
- 631.421**—Bose, R. D. Some soil heterogeneity trials at Pusa and the size and shape of experimental plots. *Indian J. Agric. Sci.* 5, 1935 (579-608).
- 631.421**—Doerell, E. G. The statistical computation and valuation of soil research and agronomic data, results and tests with the aid of a punched card method. *Lands. VersSta.* 122, 1935 (171-252). [G.]
- 631.421**—Eden, T. The development of field experiments in agricultural research. *Trop. Agricul.* 84, 1935 (63-69).
- 631.421**—Eden, T. The development of field experiments in agricultural research. Part II. *Trop. Agricul.* 84, 1935 (131-149).
- 631.421**—Fisher, R. A. The independence of experimental evidence in agricultural research. *Trans. 3rd Int. Cong. Soil Sci.* 2, 1935 (112-119).
- 631.421**—Frankena, H. J. Blank tests. *Versl. Rijkslandb.-Proefsta. Groningen*, No. 41A, 1935 (173-209). [Du.g.]
- 631.421**—Hutchinson, J. B.; Panse, V. G. Studies in the technique of field experiments. I. Size, shape and arrangement of

# BIBLIOGRAPHY OF SOIL SCIENCE

plots in cotton trials. *Indian J. Agric. Sci.* 5, 1935 (523-538). E.S.R. 74 (475).

**631.421—Hutchinson, J. B.; Panse, V. G.** Studies in the technique of field experiments. IV. A study of margin effect in variety trials with wheat and cotton. *Indian J. Agric. Sci.* 5, 1935 (671-692).

**631.421—Kerr, H. W.** Report of the Committee on field experimentation. *Abs. Pap. 5th Cong. Int. Soc. Sug. Cane Tech. Agric. Sect. Australia* 1935. *Hawaii. Plant. Rec.* 39, 1935 (291).

**631.421—Telegdy Kovats, L.** Modern methods of field experimentation in Great Britain. *Mezőg. Kutat.* 8, 1935 (361-374). [H.g.].

**631.421—Miles, S. R.** A very rapid and easy method of testing the reliability of an average and a discussion of the normal and binomial methods. *J. Amer. Soc. Agron.* 27, 1935 (21-31).

**631.421—Niklas, H.; Miller, M.** Unavoidable discrepancies in the results of fertilizer experiments and their elimination by the principle of "least compulsion". *Ernähr. Pflanze* 31, 1935 (66-67). [G.e.].

**631.421—Olsen, H. K.** Row methods in local Danish experiments. *Nord. Jordbr.Forsk.* 5-7, 1935 (318-327). [Da.].

**631.421—Saunders, A. R.** Statistical methods with special reference to field experiments. *S. Agric. Dept. Agric. Sci. Bull.* 147, 1935, pp. 76.

**631.421—Steece, H. M.; Immer, F. R., et al.** Bibliography of field experiments. *J. Amer. Soc. Agron.* 27, 1935 (1013-1018). E.S.R. 74 (476).

**631.421—Yates, F.** Some examples of biased sampling. *Ann. Eugenics* 6, 1935 (202-213).

**631.421—Yates, F.; Zaccapanay, I.** The estimation of the efficiency of sampling, with special reference to sampling for yield in cereal experiments. *J. Agric. Sci.* 25, 1935 (545-577).

**631.421—Allan, F. E.** Some principles of statistics and their application to agricultural experiments. *J. Aust. Inst. Agric. Sci.* 2, 1936 (17-23, 67-75, 154-162).

**631.421—Bartlett, M. S.** A note on the analysis of co-variance. *J. Agric. Sci.* 26, 1936 (488-491).

**631.421—Bartlett, M. S.; Greenhill, A. W.** The relative importance of plot variation and of field and laboratory sampling errors in small plot pasture productivity experiments. *J. Agric. Sci.* 26, 1936 (258-262).

**631.421—Beattie, J. H.; Boswell, V. R.** Statistical studies of apparently uniform fields of carrots and onions on peat soils. *Gartenbauwiss.* 10, 1936 (279-288). *Hort. Abs.* 6 (275).

**631.421—Bose, S. S.; Gupta, S. C. S.; Mahalanobis, P. C.** Statistical notes for agricultural workers. No. 18. Statistical analyses of a manurial experiment on Napier grass (*Pennisetum purpureum*) by the method of co-variance. *Agric. Live-Stk. India* 6, 1936 (182-194).

**631.421—Cochran, W. G.; Watson, D. J.** An experiment on observer's bias in the selection of short-heights. *Emp. J. Expt. Agric.* 4, 1936 (69-76).

**631.421—Cornish, E. A.** Non-replicated factorial experiments. *J. Aust. Inst. Agric. Sci.* 2, 1936 (79-82).

# FERTILIZERS AND GENERAL AGRONOMY

- 631.421—Crowther, E. M. The technique of modern field experiments. *J. Roy. Agric. Soc. England* 97, 1936 (54-80).
- 631.421—Goês, C. Agricultural experiments and soil heterogeneity. *Rodriguésia* 2, 1936 (239-246). [Pt.]
- 631.421—Immer, F. R. A study of the association between mean yields and standard deviations of varieties tested in replicated yield trials. *J. Amer. Soc. Agron.* 28, 1936 (24-27).
- 631.421—Kulkarni, R. K. Statistical notes for agricultural workers. No. 17. On the influence of shape and size of plots on the effective precision of field experiments with juar (*Andropogon sorghum*). *Indian J. Agric. Sci.* 6, 1936 (460-474).
- 631.421—Love, H. H. Are uniformity trials useful? *J. Amer. Soc. Agron.* 28, 1936 (234-245).
- 631.421—Miles, L. G.; Bryan, W. W. The analysis of co-variance and its use in correcting for irregularities of stand in agricultural trials for yield. *Proc. Roy. Soc. Queensland* 48, No. 4, 1936, pp. 5.
- 631.421—Niklas, H.; Miller, M. Correlation analysis and the assessment of combined fertilizer experiments. *Ztschr. Pflanz. Düng.* 42A, 1936 (150-156). B.C.A. 55 (384). G.]
- 631.421—Smith, H. Fairfield. Comparison of agricultural and nursery plots in variety experiments. *Aust. J. Coun. Sci. Indust. Res.* 9, 1936 (207-210).
- 631.421—Smith, H. Fairfield. The problem of comparing the results of two experiments with unequal errors. *Aust. J. Coun. Sci. Indust. Res.* 9, 1936 (211-212).
- 631.421—Vaidyanathan, M. Application of statistics to field technique in agriculture. *Curr. Sci.* 4, 1936 (457-468).
- 631.421—Vaidyanathan, M. Principles and practice of field experimentation. *Curr. Sci.* 5, 1936 (159-162).
- 631.421—Vaidyanathan, M. Two new statistical tables based upon Fisher's t. *Imp. Coun. Agric. Res. Misc. Bull.* 13, 1936, pp. 14.
- 631.421—Vasey, A. J. Non-replicated factorial experiments. *J. Aust. Inst. Agric. Sci.* 2, 1936 (174-175).
- 631.421—Vries, O. de. The series principle in field experiments. *Ztschr. Pflanz. Düng.* 43, 1936 (83-93). G.]
- 631.421—Yates, F. Incomplete Latin squares. *J. Agric. Sci.* 26, 1936 (301-315).
- 631.421—Yates, F. A new method of arranging variety trials involving a large number of varieties. *J. Agric. Sci.* 26, 1936 (424-455).
- 631.421—Bartlett, M. S. Some examples of statistical methods of research in agriculture and applied biology. (With discussion). *Suppl. J. Roy. Stat. Soc.* 4, 1937 (137-183).
- 631.421—Borden, R. J. Better planning for field experiments with fertilizers. *Hawaii. Plant. Rec.* 41, 1937 (99-110).
- 631.421—Brandt, A. E. Factorial design. *J. Amer. Soc. Agron.* 29, 1937 (658-667).
- 631.421—Davis, J. F.; Cook, R. L. A comparison between actual plot yields and those calculated from grain-straw ratios. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (265-268).
- 631.421—Flippin, E. D. Advantages of the use of the law of diminishing returns in the lay-out of fertilizer test plots. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (277-289).

## BIBLIOGRAPHY OF SOIL SCIENCE

**631.421—Goulden, C. H.** Efficiency in field trials of pseudo-factorial and incomplete randomized block methods. *Canad. J. Res.* 15, 1937 (231-241).

**631.421—Kadam, B. S.; Patel, S. M.** Studies in field-plot technique with *Pennisetum typhoides* Rich. *Emp. J. Expt. Agric.* 5, 1937 (219-229).

**631.421—Metzger, J. E.** Fertilized check plots. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (261-264).

**631.421—Summerby, R.** The use of the analysis of variance in soil and fertilizer experiments with particular reference to interactions. *Sci. Agric.* 17, 1937 (302-311).

**631.421—Telegdy-Kovács, L. von.** Mathematical methods for scientific research. 2. Calculation of probable yield of individual missing plots in modern field experiments. *Mezőg. Kutat.* 10, 1937 (1-7). (Hung.)

**631.421—Vries, O. de.** The series principle in field experiments. 11. *Bodenk. Pflernähr.* 4, 1937 (291-294). (G.)

**631.421—Walker, R. H.** The need for statistical control in soil experiments. *J. Amer. Soc. Agron.* 29, 1937 (650-657).

**631.421 : 551.58—Prytz, K.** Weather's influence on soil moisture content and yields. *Nord. Jordbr. Forsk.* 5-7, 1935 (293-300). (Dan.)

**631.421 : 631.3—Kemp, H. J.** Mechanical aids to crop experiments. *Sci. Agric.* 15, 1935 (488-506).

**631.421 : 631.423—Bolotina, N. I.; Filippovich, V. A.; Kirsanov, A. T.** A comparison of the results of field experiments with chemical tests of soils and an analysis of the reliability of field experiments. *Tranz. Dokuchayev. Soil Inst.* 12, 1935 (103-141). (C. A. 31 (5500).)

**631.421 : 631.51—Amos, A.** Modern statistical experimentation. Swamping effects on cultivation problems. *Fruit-Grower* 83, 1937 (85-86, 90).

### 631.422 QUALITATIVE ANALYSIS

**631.422—Hester, J. B.** Microchemical soil tests in connection with vegetable crop production. *Va. Truck Agric. Expt. Sta. Bull.* 82, 1934 (1119-1135). (E. S. R. 71 (744).)

**631.422—Kononova, M. M.** The technique of studying the organic matter of the soil according to Waksman's method. *Tranz. Dokuchayev. Inst.* 10, 1934 (39-48). *Pedology* 1935 (929).

**631.422—Morgan, M. F.** The interpretation of soil tests. *Conn. Agric. Expt. Sta. Circ.* 95, 1934 (17-22).

**631.422—Thornton, S. F.; Conner, S. D.; Fraser, R. R.** The use of rapid chemical tests on soils and plants as aids in determining fertilizer needs. *Indiana Agric. Expt. Sta. Circ.* 204, 1934 (16). (E. S. R. 72 (303).)

**631.422—Bushnell, T. M.** Quick tests for phosphorus and potassium in relation to soil survey work. *Amer. Soil Symp. Bull.* 16, 1935 (76-80).

**631.422—Conner, S. D.** What rapid tests have shown about Indiana soils. *Proc. First Ann. Meetg. Cltee. Fert. Amer. Soc. Agron.* 1935 (52-62).

**631.422—Goss, D. M.; Prince, A. L.** Results of rapid tests applied to soils of known fertilizer treatment. *Proc. First Ann. Meetg. Cltee. Fert. Amer. Soc. Agron.* 1935 (94-101). (C. A. 30 (4963).)

## FERTILIZERS AND GENERAL AGRONOMY

**631.422**—Hester, J. B. Experiments with rapid chemical soil tests for vegetable crops. *Proc. First Ann. Meetg. Comm. Fert. Amer. Soc. Agron.* 1935 (78-85). C.A. 30 (4963).

**631.422**—Morgan, M. F. The simultaneous estimation of active chemical factors in plant nutrition through tests of a sodium acetate-acetic acid soil extract. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (103-105).

**631.422**—Morgan, M. F. The universal soil testing system. *Conn. Agric. Expt. Sta. Bull.* 372, 1935 (457-483).

**631.422**—Spurway, C. H. The practical interpretations of soil test results. *Proc. First Ann. Meetg. Citce. Fert. Amer. Soc. Agron.* 1935 (102-106). C.A. 30 (4963).

**631.422** Stieglitz, C. R. v. Rapid field tests for soil fertility. *Proc. Int. Soc. Sug. Cane Tech.* 5, 1935 (631-636). C.A. 30 (3564).

**631.422** Stieglitz, C. R. v. Rapid field tests in Queensland. *Abstr. Pap. 5th Cong. Int. Soc. Sug. Cane Tech. Agric. Sect. Australia* 1935. *Hawaii Plant. Rev.* 39, 1935 (289).

**631.422** Walrath, E. K. The application of rapid chemical tests. *Proc. First Ann. Meetg. Citce. Fert. Amer. Soc. Agron.* 1935 (86-93).

**631.422**—Carolus, R. L. Experiments with rapid chemical tests for the determination of nutrient deficiencies in vegetable crops. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (579-583).

**631.422** Hance, F. E. Soil and plant material analyses by rapid chemical methods. *Hawaii Plant. Rev.* 40, 1936 (189-299).

**631.422** Hester, J. B. Interpreting rapid chemical soil tests for phosphorus for vegetable crops. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (584-588).

**631.422** Moir, W. W. G. A few remarks on the use of rapid chemical methods of soil analyses. *Repts. Assoc. Hawaii. Sug. Tech. Fifteenth Ann. Meet.* 1936 (81-82).

**631.422** Springer, U. The combined forms of humus, particularly in forest soils. *Ztschr. Pflanz. Dung.* 45, 1936 (327-352). G.

**631.422** Zimmerley, H. H. New developments in fertilizer use. *Amer. Fert.* 85, Aug. 22, 1936 (5-7, 24-25).

**631.422**—Anderson, M. S.; Noble, W. M. Comparison of various chemical quick tests on different soils. *U.S.D.A. Misc. Pub.* 259, 1937, pp. 23.

**631.422**—Blair, A. W. What is the value of rapid soil tests for New Jersey? *Amer. Fert.* 87, Oct. 30, 1937 (7-9, 24-25).

**631.422**—Hance, F. E. Soil and plant material analyses by rapid chemical methods. II. *Hawaii Plant. Rev.* 41, 1937 (137-180).

**631.422**—Hester, J. B.; Carolus, R. L.; Blume, J. M. A study of the availability of phosphorus and potash and their influence upon vegetable crop production and fertilizer practices on coastal plain soils. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (233-242).

**631.422**—Hock, A. Colour depth and value as characteristic indices for forms and type of soil humus by a new technique. *Bodenk. Pflernähr.* 2, 1937 (304-315). G.

**631.422**—International Sugar Journal. The economics of soil analysis. *Int. Sug. J.* 39, 1937 (47-49).

**631.422**—Morgan, M. F. Universal soil testing system. *Conn. Agric. Expt. Sta. Bull.* 392, 1937 (129-159). C.A. 31 (5083).



# BIBLIOGRAPHY OF SOIL SCIENCE

**631.422—Thomas, R. P. ; Williams, R. C.** A comparison of the results of rapid tests with the amounts of available nutrients obtained by quantitative methods on Maryland soils. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (243-254).

**631.422 : 631.811.9—Morgan, M. F.** Soil and plant tissue tests for minor element constituent. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (255-257).

## 631.423 QUANTITATIVE ANALYSIS

**631.423—Nabilkova, E. N.** On the influence of different concentrations of  $\text{NH}_4\text{Cl}$  and  $\text{NaCl}$  on the determination of Ca and Mg from their chlorides. *Trans. Dokuchaev Inst.* 8, 1933 (43-51). E.S.R. 71 (743). [R.e.]

**631.423—Cazaubon, E.** Interpretation of the results of soil analyses. *Bull. Assoc. Chim. Sucr.* 51, 1934 (321-324). C.A. 28 (6889).

**631.423—Hartmann, F. K. ; Meyer, F.** Fluctuations in results of hydrochloric acid extract analyses with particular reference to  $\text{SiO}_2$  and  $\text{Al}_2\text{O}_3$ . *Ztschr. Pflanz. Düng.* 36A, 1934 (196-224). [G.]

**631.423—Sokolov, N. I.** Present status of the method of chemical soil analysis. *Pedology* No. 3, 1934 (362-371). [R.e.]

**631.423—Joret, G.** Methods for the estimation of plant nutrients in the silt soils of the North of France. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (236-238). [F.]

**631.423—Schmitt, L.** Practical soil analysis. *Ernähr. Pflanze* 31, 1935 (424-430). [G.e.]

**631.423—Várallyay, G.** Cheap methods for determining the fertilizer requirement of the soil. *Mezőg. Kutat.* 8, 1935 (204-212).

**631.423—Wehrmann, O.** Soil analysis. *Ztschr. Anal. Chem.* 101, 1935 (146-154).

**631.423—Delforge, A.** Analyses of soils for the service of agriculturists. *Int. Tech. Chim. Indust. Agric. 4th Cong. Brussels* 2, 1936 (293-296). C.A. 30 (4963).

**631.423—Denisevsky, V. S. ; Gnatovskaya, A. I. ; Manzon, V. D.** Methods for agro-chemical control of soil fertility in the sugar-beet regions of U.S.S.R. *Sborn. Rab. VNIIS*, 1936 (128-144). [R.]

**631.423—Leroux, D.** Influence of trituration of agricultural soils on the amounts of the essential fertilizer principles contained in their aqueous extracts. *C.R.* 203, 1936 (117-120). [F.]

**631.423—Li, C. K.** Loss on ignition of calcareous soils. *Soil Bull. Peiping* 15, 1936 (47-50). C.A. 31 (7160). [F.]

**631.423—Radchenko, A. G.** Methods for agro-physical studies of soils in investigations of soils of Glavsakhar sovkhoses in 1935. *Sborn. Rab. VNIIS*, 1936 (119-127). [R.]

**631.423—Subrahmanyam, V.** Some new methods of soil analysis. *Madras Agric. J.* 24, 1936 (177-183). C.A. 30 (6107).

**631.423—Vernadsky, V. I.** Soil analysis from the geochemical point of view. *Pedology* No. 1, 1936 (8-16). [R.]

**631.423—Hammond, H. S.** The use of hydrofluoric acid in soil analysis. *Sci. Agric.* 17, 1937 (323-324).

**631.423—Hartmann, F. K. ; Meyer, F. O. W.** The effect of hydrochloric acid on soil under different conditions. *Bodenk. Pflernähr.* 3, 1937 (267-284). [G.]

# FERTILIZERS AND GENERAL AGRONOMY

**631.423—Hartmann, F. K.; Meyer, F. O. W.** The particle size groups of clay and base exchange phenomena in relation to hydrochloric acid extracts of soils. *Bodenk. PflErnähr.* 3, 1937 (284-308). [G.]

**631.423—Kertscher, K.** Soil tests for the practical farmer. *Phosphorsäure* 6, 1937 (78-92). C.A. 31 (7575).

**631.423—Neubauer, H.** What is the best way of testing the applicability of laboratory methods of determining the nutrient contents of soils? *Bodenk. PflErnähr.* 4, 1937 (30-50). [G.]

**631.423—Wehrmann, O.** Soil science. *Ztschr. Anal. Chem.* 110, 1937 (132-154).

**631.423—Wehrmann, O.; Lupin, O. F.; Brückner, H.** Soil science. Special analytical methods. *Ztschr. Anal. Chem.* 107, 1937 (438-455). [G.]

**631.423—Wilde, S. A.** The determination of concentration of coloured salt solutions and density of colloidal suspensions by means of Weston's photoelectric cell. *Pedology* No. 2, 1937 (149-153). [R.e.]

**631.423 : 544.6—Tsuge, T.** Spectrographic analysis of ashes and soils. *J. Sci. Soil Japan* 7, No. 4, 1933. P.I.S. 9 (107).

**631.423 : 544.6—Lundegårdh, H.** Investigations into the quantitative-emission spectral analysis of inorganic elements in solutions. *LantbrHögsk. Ann.* 3, 1936 (49-97). [E.sw.]

**631.423 : 544.6—Lundegårdh, H.** Swedish methods of spectrum analysis and their application to agricultural research and industry. *Kgl. LandbrAkad. Handl. Tidskr.* 1936 (241-256). [Sw.]

**631.423 : 544.6—Mitchell, R. L.** Spectrographic analysis of soils by the Lundegårdh method. *J. Soc. Chem. Indust.* 55, 1936 (267T-269T).

**631.423 : 544.6—Milbourn, M.** The spectrographic analysis of soils and plant materials particularly for minor elements. *J. Soc. Chem. Indust.* 56, 1937 (205T-209T). C.A. 31 (7359).

**631.423 : 544.6—Oertel, A. C.** The practicability of spectrographic estimation of the minor components of soils. *Aust. J. Coun. Sci. Indust. Res.* 10, 1937 (1-11).

**631.423 : 631.411.4—McKibbin, R. R.; Stobbe, P. C.** Methods of analysis of muck and peat soils used by the Quebec soil survey. *Macdonald Agric. Coll. Chem. Dept. Quebec*, March 1, 1935. pp. 12 (mimeo.).

**631.423 : 631.411.4—Tendeloo, H. J. C.; Uges, J. T.** The titration of humus and humus-containing soils and its significance for the liming of the soil. II. *Landbouwk. Tijdschr.* 48, 1936 (30-33). C.A. 30 (4604). [Du.]

**631.423.005—Dreyspring, C.; Heinz, W.** A new suction apparatus for the thorough separation of soil extract from soil. *Ztschr. Pflanz. Dung.* 38, 1935 (213-221). [G.]

**631.423.005—Zinzadze, C.** Photoelectric photometers for use in colorimetry. *Indust. Engng. Chem. (Anal. Ed.)* 7, 1935 (280-281).

**631.423.005—Diller, I. M.** Photoelectric colorimeter. *J. Biol. Chem.* 115, 1936 (315-322).

**631.423.2—Niskov, N.** The thermoelectric method of determining soil moisture. *Electrif. Selsk.-Khoz.* No. 9 10, 1932 (82-97).

**631.423.2—Aleksandrov, B. P.** Measurement of soil moisture by electrostatic capacity. *Trans. Int. Soc. Soil Sci. Soviet Sect. 1st Comm.* A2, 1934 (147-153). [E.]

## BIBLIOGRAPHY OF SOIL SCIENCE

**631.423.2—Furlani, J.** Methods of determining the concentration of natural moisture and soil solutions by interferometry and electrical conductivity. *Int. Rev. Hydrobiol.* 31, 1934 (66). Z.P.D. 34 (247).

**631.423.2—Aleksandrov, B. P.** A new method of measuring soil moisture according to electrostatic capacity. *Trudy Sekt. Fiz. Poche Fis.-Agron. Inst.* No. 1, 1935 (119-125). [R.]

**631.423.2—Díaz y Muñoz, J.; Tamés Alarcón, C.** Application of the Vageler and Alten method for determining the unavailable moisture with different soils and plants. *Bol. Inst. Investig. Agron. Madrid* 1, 1935 (67). Z.P.D. 41 (124). [Sp.]

**631.423.2—Morales, E.** Application of the ter Meulen-Heslinga method to the determination of organic matter and combined water in soils. *An. Soc. Españ. Fis. Quím.* 33, 1935 (942-946). C.A. 30 (3564).

**631.423.2—Obaton, F.** A rapid method for determining soil moisture. *C.R.* 201, 1935 (845-846).

**631.423.2—Rogers, W. S.** Root studies. VI. Apple roots under irrigated conditions, with notes on use of a soil moisture meter. *J. Pomol.* 13, 1935 (190-201). *Herb. Abs.* 5 (204).

**631.423.2—Shmatkov, L. A.** The conductometric method of determining soil moisture. *Khim. Sotsial. Zemled.* Nos. 11-12, 1935 (185-191). [R.]

**631.423.2—Sibirsky, W.** Carbide method for determining soil moisture. *Pedology* No. 2, 1935 (188-197). [R.]

**631.423.2—Sibirsky, W.** The determination of soil moisture by the carbide method. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (10-13). [G.]

**631.423.2—Sibirsky, W.** A rapid method for determining soil humidity. *Cong. Int. Génie Rural 2nd Cong. Madrid* 1935: (37-42). *Ann. Agron.* 6 (473).

**631.423.2—Smolik, L. C.** Is the alcohol method for determining the water content in soils reliable. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (13-14).

**631.423.2—Bauer, E. E.** Determining the percentage of moisture in soil samples without drying. *Amer. Soc. Test. Mat. Bull.* 81, 1936 (10, 11, 13). E.S.R. 76 (547).

**631.423.2—Proctor, R. R.** Soil compaction control for rolled earth dam construction. *J. Amer. Water Works Assoc.* 28, 1936 (134-141). E.S.R. 75 (261).

**631.423.2—Rivkind, T. L.; Bazhenova, A. P.** Electrical conductivity as a method for soil moisture determination. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (410-427). [R.]

**631.423.2—Sen, A.** Rapid examination of soil-moisture by drying the soil over Bunsen burner. *Indian J. Agric. Sci.* 6, 1936 (1076-1080).

**631.423.2—Vadiunina, A.** Evaluation of the carbide method for the determination of soil moisture. *Pedology* No. 1, 1936 (109-118). [R.]

**631.423.2—Zhelezkov, P. S.** Carbide methods for moisture determinations. *Khim. Sotsial. Zemled.* No. 10, 1936 (101-114). [R.]

**631.423.2—Dérivière, M.** New measure of soil absorption. *Bull. Assoc. Franç. Ét. Sol* 3, 1937 (57-59). [F.]

# FERTILIZERS AND GENERAL AGRONOMY

**631.423.2**—**Emmert, E. M.** A rapid method for determining soil moisture. *Soil Sci.* 43, 1937 (31-36).

**631.423.2 : 631.432.5**—**Bouyoucos, G. J.** The state in which the hygroscopic moisture exists in soils as indicated by its determination with alcohol. *Soil Sci.* 41, 1936 (443-447).

**631.423.2 : 631.432.5**—**Nikolaev, A.** A method for determining the maximal hygroscopic water content of soils. *Pedology* No. 1, 1936 (99-108). [R.e.]

**631.423.2 : 631.437.1**—**Vadiunina, A.** Electrical conductivity as a method for determining soil moisture. *Pedology* No. 3, 1937 (391-404). [R.e.]

**631.423.2.005**—**Budanov, M. F.** A universal apparatus for determining the moisture and physical properties of soils. *Izv. Severokavkaz. Inst. Hydrotekh.* 1-2, 1934 (3-19). *Pedology* 1936 (889).

**631.423.2.005**—**Rogers, W. S.** A soil moisture meter depending on the "capillary pull" of the soil. With illustrations of its use in fallow land, grass orchard, and irrigated orchards. *J. Agric. Sci.* 25, 1935 (326-343).

**631.423.2.005**—**Richards, L. A.; Neal, O. R.** Some field observations with tensiometers. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (71-91).

**631.423.3 : 546.19**—**Robinson, W. O.; Dudley, H. C., et al.** Determination of selenium and arsenic by distillation. *Indust. Engng. Chem. (Anal. Ed.)* 6, 1934 (274-276). E.S.R. 74 (299).

**631.423.3 : 546.19 : 546.16**—**McHargue, J. S.** Report on less common elements in soils. Arsenic. Fluorine. *J. Assoc. Off. Agric. Chem.* 18, 1935 (207-210).

**631.423.3 : 546.22**—**Bertrand, G.** Observations on the supply of combined atmospheric sulphur to arable soils. *Ann. Agron.* 5, n.s., 1935 (605-609). [F.]

**631.423.3 : 546.22**—**Bertrand, G.** On the amount of combined atmospheric sulphur deposited in arable soils. *C.R. Acad. Agric.* 21, 1935 (1015-1018).

**631.423.3 : 546.22**—**Silberstein, L.** The standardization of methods for the determination of sulphur in soils, fertilizers and agricultural industry products. *Cong. Int. Tech. Chim. Indust. Agric. 4th Cong., Brussels; Inst. Belge Amélior. Better. Pub.* 6, 1935 (401). [F.]

**631.423.3 : 546.22**—**Bertrand, G.** Observations on the combined atmospheric sulphur deposited in arable soils. *Ann. Inst. Pasteur* 56, 1936 (1-9). [F.]

**631.423.3 : 546.77**—**Stanfield, K. E.** Determination of molybdenum in plants and soils. *Indust. Engng. Chem. (Anal. Ed.)* 7, 1935 (273-274).

**631.423.3 : 546.77 : 546.76**—**Sandell, E. B.** Determination of chromium, vanadium and molybdenum in silicate rocks. *Indust. Engng. Chem. (Anal. Ed.)* 8, 1936 (336-341).

**631.423.3 : 631.414.2**—**Truog, E.; Drosdoff, M.** Determination of the mineral content of the soil absorbing complex. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (92-95).

**631.423.3 : 631.414.2**—**Truog, E.** Determination of the mineral content of soil colloids. *Amer. Soil Surv. Bull.* 17, 1936 (20). C.A. 30 (5342).

# BIBLIOGRAPHY OF SOIL SCIENCE

**631.423.3:631.416**—Rohde, G. A simple method for determining the nutrient requirement of soils based on the solubility of the nutrients in hot water. *Ztschr. Pflanz. Düng.* 30A, 1933 (331-344).

**631.423.3:631.416**—Pantoli, B. Rapid method of determining  $P_2O_5$  and  $K_2O$  applied to the Neubauer test. *Ann. Sta. Sper. Agrar. Modena* 3, 1934 (211-214). [I.]

**631.423.3:631.416** Kawe, A. Method for the estimation of the K and  $P_2O_5$  requirements of a soil with the aid of the soil solution. *Kühn-Arch.* 39, 1935 (283-293). [G.]

**631.423.3:631.416**—Knickmann, E. The determination of the fertilizer requirements of soils on the basis of their root-soluble, citric acid-soluble and water-soluble phosphoric acid. *Ztschr. Pflanz. Düng.* 41, 1935 (208-224). [G.]

**631.423.3:631.416** Truog, E.; Dean, L. A. Determination of the phosphate and potash needs of soils by chemical analysis. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (106-108).

**631.423.3:631.416**—Bamberg, K. Active and passive plant nutrients in soil and their determination. *Ztschr. Pflanz. Düng.* 45, 1936 (154-188).

**631.423.3:631.416**—Bolliger, R. Simple methods of soil analysis. *Inst. Agron. São Paulo Bol. Tech.* No. 12, 1936, pp. 9. [Pt.]

**631.423.3:631.416** Kawe, A. A natural method of determining fertilizer requirements of soil for potash and phosphate by means of the soil solution. *Ztschr. Pflanz. Düng.* 43, 1936 (69-83). [G.]

**631.423.3:631.416**—Kivekäs, J. A rapid and convenient method for the determination of the readily soluble plant nutrients, calcium, magnesium, sodium and potassium, in soil. *Acta Chem. Fenn.* 9 B, 1936 (17). C.A. 31 (2335). [E.]

**631.423.3:631.416**—Poulson, J. F. Methods for determining potash, phosphate and lime. *Tidsskr. Plantecult.* 41, 1936 (459-486). [Da.]

**631.423.3:631.416**—Thun, R. The most important methods of determining soil nutrients and their value in practical agriculture. Part II. *Bied. Zbl.* 6, 1936 (481-497). [G.]

**631.423.3:631.416**—Barbier, G. Laboratory methods for evaluating the fertilizer needs of soils. *Bull. Assoc. Chim.* 54, 1937 (538-545). C.A. 31 (5499).

**631.423.3:631.416**—Vincent. (a) Successive estimation by oxidation of Mg, CaO and  $K_2O$ . (b) Estimation of  $K_2O$  in soils and vegetable ash with sodium cobaltinitrite and oxidation with permanganate of potassium. (c) Estimation of Mg with 8-hydroxyquinoline. *Bull. Assoc. Franç. Ét. Sol.* 3, 1937 (60-64). [E.]

**631.423.3:631.416.1** Tiurin, I. V.; Kononova, M. M. A new method of determining nitrogen requirements in soils. *Trans. Int. Soc. Soil Sci. Soviet Sect. Comm.* 4, 1933 (67-74). [G.]

**631.423.3:631.416.1**—Tiurin, I. V.; Kononova, M. M. Determination of the nitrogen requirement of soils. *Trans. Dokuchaev Inst.* 10, 1934 (49-56). B.C.A. 54 (36).

**631.423.3:631.416.1**—Basu, K. P.; Sarkar, S. N. A semimicro method of determining total nitrogen of air-dry soils. *J. Indian Chem. Soc.* 12, 1935 (797-798). C.A. 30 (3564).

**631.423.3:631.416.1**—Iyer, C. R. H.; Rajagopalan, R.; Subrahmanyam, V. Oxidative digestion of organic nitrogen. *Curr. Sci.* 4, 1935 (98-99).

# FERTILIZERS AND GENERAL AGRONOMY

- 631.423.3 : 631.416.1**—Iyer, C. R. H.; Rajagopalan, R. Determination of nitrogen in soils by oxidative digestion. *J. Soc. Chem. Indust.* 54, 1935 (341T-342T).
- 631.423.3 : 631.416.1**—Li, Ching-Kuei—Sodium hydroxide as a substitute for iodine in Robinson's sulphur dioxide method. *J. Chin. Chem. Soc.* 3, 1935 (288-292). C.A. 29 (7552).
- 631.423.3 : 631.416.1**—Lundin, H.; Ellburg, J.; Riehm, H. Rapid determination of nitrogen by the Kjeldahl method. *Ztschr. Anal. Chem.* 102, 1935 (161-172). [G.]
- 631.423.3 : 631.416.1**—Narayanayya, Y. V.; Subrahmanyam, V. Determination of nitrogen (in soils). *J. Soc. Chem. Indust.* 54, 1935 (106T). B.C.A. 54 (514).
- 631.423.3 : 631.416.1**—Narayanayya, Y. V.; Subrahmanyam, V. Estimation of nitrogen by fumeless digestion. Part I. *Proc. Indian Acad. Sci.* 23, 1935 (213-235).
- 631.423.3 : 631.416.1**—Olendsky, V. I. Methods for determining nitrogen in water-soluble organic compounds in soil. *Vitim Sborn. Rab. Sekl. Agrotech.* No. 119, 1935 (47-57). [R.e.]
- 631.423.3 : 631.416.1**—Rigotard, M. Note on amide nitrogen in some soils from hot regions. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (108-109). [F.]
- 631.423.3 : 631.416.1**—Rossi, G. de. The fixation of nitrogen in soils. V. A cause of errors in the determination of the nitrogen fixing power of the microorganisms. *Boll. Soc. Int. Microbiol. Sez. Ital.* 7, 1935 (218-221). C.A. 29 (6996).
- 631.423.3 : 631.416.1**—Shewan, J. M. A chromic acid modification of the Kjeldahl method for the determination of nitrogen in organic compounds. *J. Soc. Chem. Indust.* 54, 1935 (172T-174T).
- 631.423.3 : 631.416.1**—Sreenivasan, A. Determination of nitrogen in soils. Part V. Estimation of total nitrogen to include nitrates. *J. Indian Inst. Sci.* 18A, Pt. VI (25-28).
- 631.423.3 : 631.416.1**—Valmari, J. The electrometric determination of nitrate and nitrite nitrogen. *Maat. Aikah.* 7, 1935 (49-72). [G.h.]
- 631.423.3 : 631.416.1**—Walkley, A. An examination of methods for determining organic carbon and nitrogen in soils. *J. Agric. Sci.* 25, 1935 (598-609).
- 631.423.3 : 631.416.1**—Whitfield, B. W.; Henry, A. J. Soil nitrogen. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (224-226).
- 631.423.3 : 631.416.1**—Beet, A. E.; Furzey, D. G. A new Kjeldahl method for the determination of nitrogen in foods, feeding stuffs, leather, etc. *J. Soc. Chem. Indust.* 55, 1936 (108T-109T).
- 631.423.3 : 631.416.1**—Iyer, C. R. H.; Rajagopalan, R. Estimation of nitrogen by fumeless digestion. Part III. *Proc. Indian Acad. Sci.* 4, 1936 (122-127).
- 631.423.3 : 631.416.1**—Iyer, C. R. H.; Rajagopalan, R.; Subrahmanyam, V. Estimation of nitrogen by fumeless digestion. Part II. *Proc. Indian Acad. Sci.* 3, 1936 (35-70).
- 631.423.3 : 631.416.1**—Saha, Srish Kumar. A modified micro method for the estimation of nitrogen in soil. *J. Indian Chem. Soc.* 13, 1936 (17). C.A. 30 (4261). B.C.A. 55 (513).
- 631.423.3 : 631.416.1**—Spiers, J.; Mitchell, W. J. Estimation of nitrogen by Kjeldahl's method. Note on the ammonia distillation. *J. Inst. Brew.* 42, 1936 (247-250).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.423.3 : 631.416.1** —Subrahmanyam, V. Determination of nitrogen in soils. *Agric. Live-Stk. India* 6, 1936 (284-288).
- 631.423.3 : 631.416.1** —Dyck, A. W. J.; McKibbin, R. R. A study of the nitrogenous fraction of soils. *Sci. Agric.* 17, 1937 (318-322).
- 631.423.3 : 631.416.1** —Gayley, C. T. Determination of nitrogen and carbon in the same sample. *Indust. Engng. Chem. (Anal. Ed.)* 9, 1937 (422-423).
- 631.423.3 : 631.416.1** —Mitscherlich, E. A.; Beutelspacher, H. The determination of organic nitrogen by the Kjeldahl method in the presence of nitrates. *Bodenk. Pflernahr.* 3, 1937 (195-201). [G.]
- 631.423.3 : 631.416.1** —Reuszer, H. W. Total nitrogen changes in certain Colorado soils as determined by the Kjeldahl method. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (195).
- 631.423.3 : 631.416.1** —546.23 Ashton, F. L. Selenium as a catalyst in the Kjeldahl method as applied to soil and grass analysis. *J. Agric. Sci.* 26, 1936 (239-248).
- 631.423.3 : 631.416.1** —546.23 Schwoegler, E. J.; Babler, B. J.; Hurd, L. C. Copper selenite as a catalyst in the Kjeldahl nitrogen determination. *J. Biol. Chem.* 113, 1936 (749-751).
- 631.423.3 : 631.416.1** —546.23 Ashton, F. L. The acceleration of digestion in the Kjeldahl method as applied to soil and grass analysis. *J. Soc. Chem. Indust.* 56, 1937 (1041-1044). C.A. 31 (4036).
- 631.423.3 : 631.416.1** —546.23 Ohmasa, M. Modification of Kjeldahl method using selenium as a catalyst in digestion. *J. Sci. Soil Japan* 11, 1937 (132-138). [J.]
- 631.423.3 : 631.416.1** —546.23 Murneek, A. E.; Heinze, P. H. Speed and accuracy in determination of total nitrogen. *Missouri Agric. Expt. Sta. Res. Bull.* 261, 1937, pp. 8.
- 631.423.3 : 631.416.11** —Alten, F.; Hille, E. The colorimetric determination of ammonia in small amounts of material. *Angew. Chem.* 48, 1935 (137). [G.]
- 631.423.3 : 631.416.11** —Subrahmanyam, V. Estimation of ammonia volatilized from soils. *Nature* 139, 1937 (884).
- 631.423.3 : 631.416.12** —Bennett, H.; Hartwood, H. F. Volumetric determination of nitrites by means of ceric sulphate solution. *Analyst* 60, 1935 (677-680). C.A. 30 (49).
- 631.423.3 : 631.416.12** —Alten, F.; Knippenberg, E. The determination of nitrites in green plants and plant extracts. *Bodenk. Pflernahr.* 2, 1937 (245-251). [G.]
- 631.423.3 : 631.416.12** —Pandafai, K. M. Determination of nitrous and nitric nitrogen in soils. *Proc. Nat. Inst. Sci. India* 3, 1937 (241-250).
- 631.423.3 : 631.416.13** —Davidson, J.; Krasnitz, A. Determination of nitrates. Modification of the Devarda method. *Indust. Engng. Chem. (Anal. Ed.)* 6, 1934 (315-316). *Biol. Zbl.* 6 (304).
- 631.423.3 : 631.416.13** —Stephenson, K. E. Determination of nitrate in soils. *Chem.-Anal.* 24, 1935 (16). C.A. 30 (205).
- 631.423.3 : 631.416.13** —Alten, F.; Wandrowsky, B.; Hille, E. The determination of nitrates in plant material with nitroxylenol. *Bodenk. Pflernahr.* 1, 1936 (340-348). [G.]
- 631.423.3 : 631.416.2** —Dreyspring, C.; Heinz, W. The simultaneous determination of the supply of easily soluble phosphoric

# FERTILIZERS AND GENERAL AGRONOMY

acid and the fixation of fertilizer phosphoric acid in the soil. *Ztschr. Pflanz. Düng.* 35A, 1934 (362-374). [G.]

**631.423.3 : 631.416.2** Gleria, J. di ; Telegdy-Kováts, L. Application of colorimetric  $P_2O_5$  determination in practical agricultural chemistry. *Kisérlet. Közlem.* 37, 1934 (157-164). C.A. 29 (1922).

**631.423.3 : 631.416.2** Smolik, L. Truog's readily available phosphorus compared with electrolysable phosphorus in the soil. *Vest. Čsl. Akad. Znan.* 10, 1934 (602-605). [Cz.e.]

**631.423.3 : 631.416.2** Zalkind, T. L. The suitability of ordinary methods of determining absorbable phosphates in the analyses of alkaline soils. *Trudy Tsent. Nauch. Inst. Sakh. Prom.* (Moscow) No. 18, 1934 (323-332). C.A. 29 (8201).

**631.423.3 : 631.416.2** Alekseeva, A. V. Application of Deniges' method to the determination of citric-soluble  $P_2O_5$  in carbonate soils. *Khim. Sotsial. Zemled.* No. 8, 1935 (41-43). [R.e.]

**631.423.3 : 631.416.2** Fisher, R. A. ; Thomas, R. P. The determination of the forms of inorganic phosphorus in soils. *J. Amer. Soc. Agron.* 27, 1935 (863-873).

**631.423.3 : 631.416.2** Gračanin, M. The determination of root-soluble soil phosphate by the citric acid method. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (97-99). [G.]

**631.423.3 : 631.416.2** Hardon, H. J. ; Wirjodihardjo, W. Determination of phosphoric acid in soil extracts according to Blair's titrimetric method. *Versl. 15e Vergad. Vereen. Proefsta.-Pers. Batavia*, Oct. 1935 (185-189). [Du.]

**631.423.3 : 631.416.2** Kirsanov, A. Methods of determining the phosphoric acid requirement of soils. *Trans. Dokuchaev Soil Inst.* 12, 1935 (181-230). C.A. 31 (5499). [R.e.]

**631.423.3 : 631.416.2** Kurchatov, P. A. ; Pil', Y. F. Organic phosphorus in soils and quantitative methods of determining it. *Vitum Shorn. Rab. Sekt. Agrotech.* No. 119, 1935 (93-98). [R.e.]

**631.423.3 : 631.416.2** Lederle, P. Sources of error in determining phosphoric acid by the citrate method. *Ztschr. Anal. Chem.* 100, 1935 (81). Z.P.D. 42 (123).

**631.423.3 : 631.416.2** Malherbe, I. de V. ; Myburgh, S. J. Contribution on comparative methods for determining the available phosphate in soils. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (238-242).

**631.423.3 : 631.416.2** Morgan, M. F. The variance of methods of testing for phosphorus on soils previously treated with different phosphate fertilizers. *Proc. First Ann. Meetg. Citric Fert. Amer. Soc. Agron.* 1935 (45-51). C.A. 30 (4967).

**631.423.3 : 631.416.2** Siniagin, I. I. The simplified Sigmund method for the determination of the available phosphoric acid in carbonate soils. *Agric. Sci. Kazakhstan* 3 4, 1935 (61-64). [R.e.]

**631.423.3 : 631.416.2** Tommasi, G. ; Marimpietri, L. New chemical method for determining the phosphate requirements of soils. *Ztschr. Pflanz. Düng.* 38, 1935 (161-163). [G.]

**631.423.3 : 631.416.2** Wilhelmj, A. ; Siemens, K. H. Determination of phosphoric acid by titration. *Phosphorsäure* 5, 1935 (362-373). B.C.A. 55 (1115).

**631.423.3 : 631.416.2** Wrenshall, C. L. ; McKibbin, R. R. A comparison of some methods used in extracting soil phosphates,



# BIBLIOGRAPHY OF SOIL SCIENCE

- with a proposed new method. *J. Amer. Soc. Agron.* 27, 1935 (511-518).
- 631.423.3 : 631.416.2**—Zinzadze, C. Colorimetric methods for the determination of phosphorus. *Indust. Engng. Chem. (Anal. Ed.)* 7, 1935 (227-230).
- 631.423.3 : 631.416.2**—Askew, H. O. Soil phosphate studies. Part III. Extraction of phosphoric acid by acid solutions. *N.Z. J. Sci. Tech.* 18, 1935 (481-488).
- 631.423.3 : 631.416.2**—Baeyens, J.; Steniet, D. The technique of colorimetric determination of phosphate in soils. *Agricultura, Louvain*, 39, 1936 (46-60). [F.L.]
- 631.423.3 : 631.416.2**—Dashevsky, L. I. Methods for determining mobile  $P_2O_5$  in carbonate soils. *Sborn. Rab. VNIS*, 1936 (159-161). [R.]
- 631.423.3 : 631.416.2**—Dushechkin, A. I.; Goroditsky, V. I. The effect of  $H_2O_2$  on soil, as a method of separating the organic and mineral forms of P. *Trudi Inst. Agrogrunt. Khim.* 1, 1936 (4-14). [U.S.S.R.]
- 631.423.3 : 631.416.2**—Etienne, H. Benzidine phosphomolybdate and its use in the colorimetric determination of phosphoric acid. *Bull. Soc. Chim. Belge* 45, 1936 (516-538). C.A. 31 (64).
- 631.423.3 : 631.416.2**—Fehér, D. The colorimetric determination of the phosphate content of soils by electrophysical methods. *Bodenk. Pflernähr.* 1, 1936 (219-223). [G.]
- 631.423.3 : 631.416.2**—Halais, P. "Assimilable"  $P_2O_5$  determined by the potassium carbonate method in relation to total  $P_2O_5$  and soil reaction. *Rev. Agric. Maurice* 1936 (212-217). [F.]
- 631.423.3 : 631.416.2**—Kidson, E. B. The effect of temperature on the extraction of "available" phosphoric acid in soils. *N.Z. J. Sci. Tech.* 17, 1936 (685-690).
- 631.423.3 : 631.416.2**—McLean, W. The determination of phosphorus in soils. *J. Agric. Sci.* 26, 1936 (331-336).
- 631.423.3 : 631.416.2**—Nemec, A. Comparative investigations on the determination of phosphate requirements of soils according to A. v. Sigmund's nitric acid method. *Ztschr. Pflanz. Düng.* 42, 1936 (143-150).
- 631.423.3 : 631.416.2**—Puri, A. N.; Asghar, A. G. Estimation of available phosphates in soils by  $CO_2$  extraction. *Soil Sci.* 42, 1936 (39-45).
- 631.423.3 : 631.416.2**—Steigmann, A. Sensitive reaction for phosphate. *Chem. Ztg.* 60, 1936 (129). C.A. 30 (6672).
- 631.423.3 : 631.416.2**—Vincent, V. Determination of available phosphoric acid in acid and neutral soils with citric acid. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (123-126). [F.]
- 631.423.3 : 631.416.2**—Whitney, R. S.; Gardner, R. Notes on estimating available phosphorus by extracting soils with a potassium carbonate solution. *Soil Sci.* 41, 1936 (33-34).
- 631.423.3 : 631.416.2**—Eddy, C. W.; Deeds, F. A photoelectric method for the determination of phosphorus. *Indust. Engng. Chem. (Anal. Ed.)* 9, 1937 (12-14).
- 631.423.3 : 631.416.2**—Hager, G.; Stollenwerk, W. The colorimetric determination of phosphoric acid in soil investigation by the plant seedling method of Neubauer-Schneider. *Bodenk. Pflernähr.* 4, 1937 (8-10). [G.]

## FERTILIZERS AND GENERAL AGRONOMY

- 631.423.3 : 631.416.2** -Herrmann, R.; Sindlinger, F. The colorimetric determination of phosphoric acid in the plant seedling method. *Bodenk. PflErnähr.* 4, 1937 (1-8). [G.]
- 631.423.3 : 631.416.2** -Hoffmann, Q. The colorimetric determination of phosphoric acid in Neubauer ash. *Bodenk. PflErnähr.* 4, 1937 (16-18). [G.]
- 631.423.3 : 631.416.2** -Holman, W. M.; Pollard, A. G. The colorimetric determination of phosphate, with special reference to the displaced soil solution. *Chem. Indust.* 56, 1937 (339T-343T).
- 631.423.3 : 631.416.2** -Müller, F. W. Comparative tests of the determination of phosphoric acid in seedling plants by the Lorenz and by van Hermann and Sindlinger procedure for the colorimetric determination according to Zinztatze. *Bodenk. PflErnähr.* 4, 1937 (13-16). [G.]
- 631.423.3 : 631.416.2** -Schmitt, L. The colorimetric determination of phosphoric acid in the Neubauer plant seedling method. *ForschDienst.* 3, 1937 (596-600). [G.]
- 631.423.3 : 631.416.2** -Schmitt, L. Simplification of Neubauer's seedling method by colorimetric determination of phosphoric acid. *Bodenk. PflErnähr.* 4, 1937 (10-13). B.C.A. 56 (1099).
- 631.423.3 : 631.416.315** -Fraps, G. S.; Fudge, J. F.; Carlyle, E. C. Estimation of iodine in soils. *J. Assoc. Off. Agric. Chem.* 18, 1935 (314-315). C.A. 29 (4866).
- 631.423.3 : 631.416.315** -McHargue, J. S.; Young, D. W. Report on less common elements in soil. *J. Assoc. Off. Agric. Chem.* 19, 1936 (264-268).
- 631.423.3 : 631.416.323** -Robinson, W. O.; Dudley, H. C. *et al.* Determination of selenium and arsenic by distillation. *Indust. Engng. Chem. (Anal. Ed.)* 6, 1934 (274-276). E.S.R. 74 (299).
- 631.423.3 : 631.416.323** -Williams, K. T. Report on selenium in soils. *J. Assoc. Off. Agric. Chem.* 20, 1937 (225-228). C.A. 31 (5082).
- 631.423.3 : 631.416.327** -Scharrer, K.; Gottschall, R. The technique of determining small amounts of borate. *Ztschr. Pflanz. Düng.* 39, 1935 (178-197). [G.]
- 631.423.3 : 631.416.327** -Bobko, E. V.; Matveeva, T. V. Methods for determining boron in soils and plants. *Zh. Prikl. Khim.* 9, 1936 : (532-540). R.
- 631.423.3 : 631.416.327** -Bollmann, A. The determination of minute amounts of boron. *ForschDienst.* 2, 1936 (600-603).
- 631.423.3 : 631.416.328.4** -Line, W. R.; Aradine, P. W. Determination of quartz in the presence of silicates. *Indust. Engng. Chem. (Anal. Ed.)* 9, 1937 (60-63).
- 631.423.3 : 631.416.4 5** -Tananaev, N. V. Baryta method for the volumetric determination of alkalis. *Zavod. Lab.* No. 516, 1932 (51-56). *Chem. Zbl.* 11, 1934 (3410). C.A. 29 (6994).
- 631.423.3 : 631.416.4 5** -Grindel, M. Quantitative determination of potassium, without separating sodium, by the refractometric method. *Khim. Sotsial. Zemed.* No. 3, 1935 (101-106). [R.]
- 631.423.3 : 631.416.4 5** -Tsyplenkin, E. I. Indirect method for the determination of potassium and sodium by the total of their chloride salts and the anion. *Khim. Sotsial. Zemed.* Nos. 11-12, 1935 (91-94). R.

## BIBLIOGRAPHY OF SOIL SCIENCE

- 631.423.3:631.416.4** Antipov-Karataev, I. N.; Miasnikova, A. M. The volumetric method of determining potash. *Trudy Gdrevsk. Inst. Udob.* 17, 1933 (69). Z.P.D. 37 (381). R.
- 631.423.3:631.416.4**—Beutelspacher, H. Method for determining small amounts of potassium in soil solutions. Thesis, *Hohenheim Inst. Pflanz. Ernähr.* 1933. *Bied. Zbl.* 65 (249).
- 631.423.3:631.416.4** Kirsanov, A. The chemical determination of the potash requirement of soils. *Trans. Int. Soc. Soil Sci. Societ. Sect. 4th Comm.*, 1933 (249-251).
- 631.423.3:631.416.4**—Krumins, K. A kalimeter for measuring potash requirements. *J. Landw. Riga*, No. 7, 1933. *Bied. Zbl.* 65 (198).
- 631.423.3:631.416.4** Groetzner, E. Investigations on the determination of potassium available to plants. *Ztschr. Pflanz. Düng.* 35A, 1934 (269-296). G.
- 631.423.3:631.416.4** Kirsanov, A. T.; Kirsanova, E. E. et al. The chemical determination of potash fertilizer requirements of soils. *Ztschr. Pflanz. Düng.* 34A, 1934 (196-208). C.A. 29 (871). G.
- 631.423.3:631.416.4**—Melnikov, F. F. The determination of potash with the Guttik-Tananaev reagent. *Trudy Vnatskogo Vet. Inst.* 1, 1934 (81-90). *Pedology* 1936 (909). R.
- 631.423.3:631.416.4**—Peng, Chien. New methods for the determination of potassium as the cobaltinitrite. *Trans. Sci. Soc. China* 8, 1934 (153-156). C.A. 29 (3937).
- 631.423.3:631.416.4**—Piper, C. S. Volumetric determination of potassium by the cobaltinitrite method. *J. Soc. Chem. Indust.* 53, 1934 (392-396F). C.A. 29 (1031).
- 631.423.3:631.416.4** Prince, A. L.; Blair, A. W. The Bray method for available potassium applied to soils of known potassium treatment. *N. J. Agric. Expt. Sta. Circ.* 292, 1934, pp. 7. C.A. 28 (8900).
- 631.423.3:631.416.4** Reynaert, S. The determination of the water- and citric acid-soluble potassium in our arable soils. *Agricoltura Louvain* 37, 1934 (203-222). C.A. 29 (270).
- 631.423.3:631.416.4** Sunawala, S. D.; Krishnaswami, K. R. Estimation of potassium by the cobaltinitrite method. *J. Indian Inst. Sci.* 17A, 1934 (105-112).
- 631.423.3:631.416.4** Bondorff, K. A. Laboratory methods of determining phosphorus and potassium deficiency of soils. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (229-232).
- 631.423.3:631.416.4** Gisiger, L. The determination of the potash requirement of soils with particular reference to the Dirks method. *Landw. VersSta.* 123, 1935 (209-225). G.
- 631.423.3:631.416.4** Guselnov, D. A new method for the determination of available potassium in carbonate soils. *Khim. Sotsial. Zemled.* No. 5, 1935 (53-57). Rg.
- 631.423.3:631.416.4**—Harris, H. G. A comparison of potassium permanganate and ceric sulfate for the oxidation of cobaltinitrite in the estimation of potassium in KCl solution and in ammonium acetate-soil extracts. *Soil Sci.* 40, 1935 (301-309).
- 631.423.3:631.416.4**—Hoagland, D. R.; Martin, J. C. Absorption of potassium by plants and fixation by the soil in relation to certain methods for estimating available nutrients. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (99-103).

# FERTILIZERS AND GENERAL AGRONOMY

- 631.423.3 : 631.416.4**—**Lanik, J.** Determination of potassium in citric acid soil extracts by the cobaltinitrite method and the chemical composition of the soil. *Sborn. Čsl. Akad. Zeměd.* 10, 1935 (358-368). [Cz. g.]
- 631.423.3 : 631.416.4**—**Lohse, H. W.** Determination of small amounts of potassium by means of sodium cobaltinitrite. *Indust. Engng. Chem. (Anal. Ed.)* 7, 1935 (272).
- 631.423.3 : 631.416.4**—**Nemec, A. ; Lanik, J.** The determination of the potash contents of citric acid extracts of soils in the Neubauer method and in liquid manure samples by the cobaltinitrite method. *Ztschr. Pflanz. Düng.* 37, 1935 (257-270).
- 631.423.3 : 631.416.4**—**Nydahl, F.** Methods of determining the potash fertilizing requirements of arable soils. II. *Kgl. Landtbr.-Akad. Handl. Tidskr.* 74, 1935 (435-442). C.A. 29 (6994). [Sw.e.]
- 631.423.3 : 631.416.4**—**Pelve, Ya. V.** Technique for the determination of potassium in soils. *Khim. Sotsial. Zemled.* No. 6, 1935 (71-83). [R. g.]
- 631.423.3 : 631.416.4**—**Piper, C. S.** The volumetric determination of potassium by the cobaltinitrite method. *J. Soc. Chem. Indust.* 54, 1935 (1571-1581).
- 631.423.3 : 631.416.4**—**Riehm, H.** Sedimetric determination of potash, a method for routine analysis. *Ztschr. Pflanz. Düng.* 39, 1935 (28-38). [G.]
- 631.423.3 : 631.416.4**—**Riehm, H.** The colorimetric determination of potash according to Lebermann. *Ztschr. Pflanz. Düng.* 39, 1935 (309-314). [G.]
- 631.423.3 : 631.416.4**—**Aho, V.** Colorimetric determination of potassium in soil extracts. *Acta Chem. Fenn.* 9B, 1936 (135-139). B.C.A. 56 (270).
- 631.423.3 : 631.416.4**—**Bondorff, K. A.** Laboratory estimations of the potash requirements of Danish soils. *Ernähr. Pflanze* 32, 1936 (41-43). [G.e.]
- 631.423.3 : 631.416.4**—**Brovkina, E. A.** Determination of soluble potash in soils. *Sborn. Rab. VNIIS.* 1936 (145-158). [R.]
- 631.423.3 : 631.416.4**—**Kenny, W. R. ; Hester, J. B.** A reagent for the elimination of the influence of high ammonia concentrations upon the potash results in short chemical soil tests. *J. Amer. Soc. Agron.* 28, 1936 (682-683).
- 631.423.3 : 631.416.4**—**Krauss, J.** A suitable technique for cheap routine investigations to determine the potassium requirement of soils. *Bodenk. PflErnähr.* 1, 1936 (301-320). [G.]
- 631.423.3 : 631.416.4**—**Nemec, A.** Investigations on the determination of potash requirement of soils by A. v. Sigmund's method. *Ztschr. Pflanz. Düng.* 45, 1936 (105-110). [G.]
- 631.423.3 : 631.416.4**—**Prettenhoffer, I.** The determination of the easily assimilable potassium content of soils. *Kisér. Közlem.* 39, 1936 (25-36). C.A. 30 (6870).
- 631.423.3 : 631.416.4**—**Robinson, R. J. ; Putnam, G. L.** Determination of small amounts of potassium by means of silver cobaltinitrite. *Indust. Engng. Chem. (Anal. Ed.)* 8, 1936 (211-213).
- 631.423.3 : 631.416.4**—**Truog, E. ; Volk, G. W. ; Pong, C. et al.** Improvements in the cobaltinitrite method for potassium and adaptation for soil, mineral, fertilizer and ash analysis. *Abstr. Pap. Meetg. Div. Fert. Chem.* 1936 ; *Amer. Fert.* Sept. 19, 1936 (6).

# BIBLIOGRAPHY OF SOIL SCIENCE

**631.423.3 : 631.416.4**—Bray, R. H. Calibrating soil tests for available potassium. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (225-231).

**631.423.3 : 631.416.4**—Deemer, R. B.; Martin, J. B.; Dawson, P. R. Ammonium fluoride fusion: a rapid means of determining potassium in soils. *Science* 86, 1937 (108).

**631.423.3 : 631.416.4**—Gleeseking, J. E.; Snider, H. J. Estimation of potassium in silicates and soils. *Indust. Engng. Chem. (Anal. Ed.)* 9, 1935 (232-233).

**631.423.3 : 631.416.4**—Goy, S. The rapid flame photometric method for determining potassium in soil investigations. II. *Boleak. Pflernähr.* 3, 1937 (308-313). [G.]

**631.423.3 : 631.416.4**—Hayashi, Y.; Kobayashi, J. Influence of phosphate in determining potash by the chloroplatinate method. *J. Sci. Soil Japan* 11, 1937 (139-142). [J.]

**631.423.3 : 631.416.5**—Alten, F.; Weiland, H. Determination of sodium in potash salts and crude potash by the uranyl-acetate method. *Mitt. Kali-Forsch. Aust.* Sept. 1933 (11-16).

**631.423.3 : 631.416.5**—Schultz, A. L. Application of the gravimetric zinc-uranyl method for the determination of absorbed sodium in the soil. *Khim. Subst. Zemled.* No. 8, 1934 (61-67). *Pedology* 1936 (161).

**631.423.3 : 631.416.5**—Bogolepov, N. I. Iodometric method for the determination of the sum of calcium and sodium oxide in clay soil. *Legkie Metally* 12, 1935 (49-51). *Pedology* 1937 (280).

**631.423.3 : 631.416.5**—Mulwani, B. T.; Pollard, A. G. Determination of small amounts of sodium in soil solutions, extracts etc. *J. Soc. Chem. Indust.* 56, 1937 (128T-129T).

**631.423.3 : 631.416.5**—Nikolsky, N. N. Technique of direct determination of sodium in soil extracts with the magnesium uranyl acetate method. *Trudy S. Kh. Akad. Tomskaya* 1, No. 3, 1936 (60-78). [R.]

**631.423.3 : 631.416.7 8**—Gaudenzi, N. Volumetric method for the determination of calcium and magnesium in soils. *Ann. Sta. Sper. Agrar. Modena* 3, 1934 (181-192). C.A. 29 (3089).

**631.423.3 : 631.416.7 8**—Quantaroli, A. Determination of soluble calcium and magnesium in soil. *Ann. Chim. Appl.* 24, 1934 (458-464). B.C.A. 54 (37).

**631.423.3 : 631.416.7**—Cavetz, O. G. A method for calcium determination in soil. *Soil Res.* 4, 1935 (251-252).

**631.423.3 : 631.416.8**—Javillier, M.; Lavollay, J. Applications of microanalysis to agricultural chemistry. *Cong. Int. Tech. Chim. Indust. Agric. 4th Cong. Brussels* 2, 1935 (101-112). C.A. 30 (5141).

**631.423.3 : 631.416.8**—Hosking, J. S. Determination of cobalt, nickel, copper and zinc in soil extracts. *J. Proc. Aust. Chem. Inst.* 3, 1936 (172-183).

**631.423.3 : 631.416.846**—Alten, F.; Weiland, H.; Kurmies, B. Colorimetric determination of magnesium. *Angew. Chem.* 46, 1933 (697).

**631.423.3 : 631.416.846**—Hardon, H. J.; Wirjodihardjo, W. Determination of magnesium in hydrochloric acid soil extracts by the "oxine" method. *Chem. Weekbl.* 31, 1934 (662). B.C.A. 54 (164).

# FERTILIZERS AND GENERAL AGRONOMY

**631.423.3 : 631.416.846** Dean, L. A. ; Truog, E. Determination of manganese and magnesium in soils and silicate rocks. *Indust. Engng. Chem. (Anal. Ed.)* 7, 1935 (383-385).

**631.423.3 : 631.416.846**—Hardon, H. J. The separation of manganese during magnesium determination in soil extracts. *Versl. 15e Vergad. Vereen. Proefsta.-Pers. Batavia*, Oct. 1935 (191-193). [D.]

**631.423.3 : 631.416.846** Javillier ; Lavollay. Determination of magnesium. *Bull. Assoc. Franç. Ét. Sol* 1, 1935 (55-60). [F.]

**631.423.3 : 631.416.846**—Bastisse, E. M. Magnesia in French soils and its relation to lime and potassium. *Ann. Agron.* 6 (n.s.), 1936 (41-64).

**631.423.3 : 631.416.846**—Manzon, E. D. ; Zabiakina, M. A. Determination of absorbed magnesium in soils. *Trudi Inst. Agrogrunt. Khim.* 2, 1936 (59-67). [U.S.S.R.]

**631.423.3 : 631.416.847** Boggs, H. M. ; Alben, A. O. Determination of zinc in soils. *Indust. Engng. Chem. (Anal. Ed.)* 8, 1936 (97-99).

**631.423.3 : 631.416.847**—Jones, H. W. ; Gall, O. E. ; Barnette, R. M. The reaction of zinc sulphate with the soil. *Fla. Agric. Expt. Sta. Bull.* 298, 1936, pp. 42.

**631.423.3 : 631.416.856**—Stolze, E. The estimation of copper in minute amounts, especially in plants. *Bodenk. PflErnähr.* 1, 1936 (115-132). C.A. 30 (8066).

**631.423.3 : 631.416.862.1**—Voznesensky, V. ; Khukovskaia, S. Rapid method for determining aluminium in ores, grog and clays by means of 8-hydroxyquinoline. *Silal* 3, 1933 (116-120). C.A. 27 (5271).

**631.423.3 : 631.416.862.1** Hellmers, J. H. ; Köhler, R. Optical method for determining the content of alumina and silica gels in soils. *Mitt. Lab. Preuss. Landesanst.* 21, 1935 (22-54). C.A. 30 (6108). [G.]

**631.423.3 : 631.416.862.1**—Molchanov, S. P. ; Kozlova, S. M. Determination of small amounts of aluminium in the soil. *Khim. Sotsial. Zemled.* Nos. 11-12, 1935 (129-135). [R.]

**631.423.3 : 631.416.862.1**—Osugi, S. ; Nishigaki, H. Micro-analytical method for alumina and the distribution of water-soluble alumina in the tea-garden soil of Uji district, Kyoto, Japan. *J. Sci. Soil Japan* 9, 1935 (149-158). C.A. 29 (5975).

**631.423.3 : 631.416.862.1** Rinne, R. Investigations on the determination of aluminium for soil analysis. *Ztschr. Pflanz. Düng.* 39, 1935 (278-286). [G.]

**631.423.3 : 631.416.862.1**—Mitchell, R. L. ; Robertson, I. M. The effect of aluminium on the flame spectra of the alkaline earths : a method for the determination of aluminium. *J. Soc. Chem. Indust.* 55, 1936 (269-272).

**631.423.3 : 631.416.862.1**—Peive, Ya. V. Technique for the determination of replaceable aluminium in flax soils. *Khim. Sotsial. Zemled.* No. 12, 1936 (95-102). [R.]

**631.423.3 : 631.416.871.1**—Alten, F. ; Weiland, H. Investigations on the colorimetric determination of manganese by persulphate. *Ztschr. Pflanz. Düng.* 30A, 1933 (193-198). [G.]

**631.423.3 : 631.416.871.1**—Bandurko, E. I. ; Ivanova, N. K. Colorimetric method for the determination of Mn in soil extracts.

# BIBLIOGRAPHY OF SOIL SCIENCE

*Trudy Tsent. Sta. Ris. Khoz.* No. 4, 1934 (37-48). *Pedology* 1935 (1928). [R.]

**631.423.3 : 631.416.871.1** -Leeper, G. W. Relationship of soils to manganese deficiency of plants. *Nature* 134, 1934 (972-973). C.A. 29 (1561).

**631.423.3 : 631.416.871.1** -Dean, E. A.; Truog, E. Determination of manganese and magnesium in soils and silicate rocks. *Indust. Engng. Chem. (Anal. Ed.)* 7, 1935 (383-385).

**631.423.3 : 631.416.871.1** -Hough, G. J. Colorimetric determination of manganese in the presence of titanium. *Indust. Engng. Chem. (Anal. Ed.)* 7, 1935 (408-409).

**631.423.3 : 631.416.871.1** -Iyer, C. R. H.; Rajagopalan, R. Determination of manganese in soils. *J. Indian Inst. Sci.* 19A, Pt. 7, 1936 (57-66).

**631.423.3 : 631.416.871.1** -Subrahmanyam, V. Determination of manganese in soils. *Nagpur Agric. Coll. Mag.* 10, 1936 (168-170).

**631.423.3 : 631.416.871.1** -Sideris, C. P. Colorimetric micro-determination of manganese. *Indust. Engng. Chem. (Anal. Ed.)* 9, 1937 (445-446).

**631.423.3 : 631.416.872** -Alten, F.; Welland, H.; Hille, E. Colorimetric determination of iron with sulphosalicylic acid. *Ztschr. Angew. Allg. Chemie* 215, 1933 (81-91). [G.]

**631.423.3 : 631.416.872** -Drosdoff, M.; Truog, E. A method for removing and determining the free iron oxide in soil colloids. *J. Amer. Soc. Agron.* 27, 1935 (312-317).

**631.423.3 : 631.416.872** -Urbányi, L. New analytical methods for agricultural chemistry. 4. Studies on the colorimetric determination of iron. *Mezőgazd. 8*, 1935 (279-287). [H.g.]

**631.423.3 : 631.416.872** -Barbier, G. The determination of iron in the hydrated oxide form in soils. Application to the study of the migration of iron. *Bull. Assoc. Franç. Ét. Sol* 2, 1936 (283-287). [F.]

**631.423.3 : 631.416.872** -Brioux, C.; Jouis, E. Some observations on the determination of free iron oxide in soils. *Bull. Assoc. Franç. Ét. Sol* 2, 1936 (288-291). [F.]

**631.423.3 : 631.416.872** -Clark, N. A.; Sieling, D. A. Determination of iron in humates. Use of iodohydroxyquinoline sulphuric acid. *Indust. Engng. Chem. (Anal. Ed.)* 8, 1936 (256-257).

**631.423.3 : 631.416.872** -Iyengar, B. A. S. A method for the estimation of iron in soil extracts and other biological media. *Proc. Soc. Biol. Chem. India* 1, 1936 (11).

**631.423.3 : 631.416.872** -Ignatieff, V. Method for determining ferrous iron in soil solutions and a study of the effect of light on the reduction of iron by citrate and 2,2'-dipyridyl. *J. Soc. Chem. Indust.* 56, 1937 (407T-410T).

**631.423.3 : 631.416.873** -Kidson, E. B.; Askew, H. O.; Dixon, J. K. Colorimetric determination of cobalt in soils and animal organs. *N.Z. J. Sci. Tech.* 18, 1936 (601-607).

**631.423.3 : 631.416.873** -Cumbers, C. F.; Coppock, J. B. M. Dipotassium sodium cobaltinitrite and its application to the gravimetric determination of cobalt. *J. Soc. Chem. Indust.* 56, 1937 (405T-407T).

# FERTILIZERS AND GENERAL AGRONOMY

**631.423.3 : 631.416.881.1 Sandell, E. B.** Determination of chromium, vanadium and molybdenum in silicate rocks. *Indust. Engng. Chem. (Anal. Ed.)* 8, 1936 (336-341).

**631.423.3 : 631.811.4—Aliamovsky, N. I.** A brief review of methods for determining the lime requirements of soils, carried out in the U.S.S.R. *Trans. Int. Soc. Soil Sci. Soviet Sect. 4th Comm.*, 1933 (109-133). [G.]

**631.423.3 : 631.811.4 Braadlie, O.** Calculation of the quantity of lime which must be supplied to the soil to obtain a certain value of pH. *Tidsskr. Norske Landbr.* 41, 1934 (175-182). C.A. 30 (3562).

**631.423.3 : 631.811.4—Fraschina, C.** Dirks and Scheffer's method for the determination of the lime requirement of soils. *Landw. Jahrb. Schweiz* 84, 1934 (905-912). [G.]

**631.423.3 : 631.811.4 Maschaupt, J. G.; Have, J. Ten.** The determination of the lime status or degree of saturation of clay soils. *Versl. Rijkslandb.Proefsta. Groningen* No. 40A, 1934 (695-775). Du g.

**631.423.3 : 631.811.4—Prescott, J. A.; Stephens, C. G.** The determination of the lime requirements of soils in association with soil surveys. *Aust. J. Coun. Sci. Indust. Res.* 7, 1934 (185-186).

**631.423.3 : 631.811.4 Arena, A.** Investigations on the lime requirement of acid soils and methods for its determination. *Rev. Argent. Agron.* 2, 1935 (184-235). Sp.e.

**631.423.3 : 631.811.4 Tendeloo, H. J. C.; Nierstrasz, C. A.** The titration of humus and humus-containing soils in relation to soil liming. *Landbouwk. Tijdschr.* 47, 1935 (259-269). [Du.]

**631.423.3 : 631.811.4 Aliamovsky, N. I.** A simplified method for the determination of lime requirement according to the method of titration curves of soil suspensions. *Khim. Sotsial. Zemled.* 4, 1936 (105-115).

**631.423.3 : 631.811.4—Clarens, J.** Soils XIX. Lime requirement of soils. *Bull. Soc. Chim.* 3, 1936 (2360-2365). B.C.A. 56 (268).

**631.423.3 : 631.811.4—Godlin, M. M.** Determination of the lime requirement of soils. *Trudi Inst. Agrogrunt. Khim.* 2, 1936 (67-83). U.r.e.

**631.423.3 : 631.811.4 Lipkind, I. M.** Field coefficient for determining the amount of lime according to Jensen's method. *Trudy Gdronz. Inst. Udob. Leningr. Lab.* 45, 1936 (171-184). [R.e.]

**631.423.3 : 631.811.4—Naftel, J. A.** Soil liming investigations. I. The calcium carbonate equilibration method of liming soils for fertility investigations. *J. Amer. Soc. Agron.* 28, 1936 (609-622).

**631.423.3 : 631.811.4—Piper, C. S.; Stephens, C. G.** A comparison between Schofield's para-nitrophenol buffer method and the method of Prescott and Stephens for the determination of lime requirement of soils. *Aust. J. Coun. Sci. Indust. Res.* 9, 1936 (125-127).

**631.423.3 : 631.811.4—Puri, A. N.; Vanshylla, A. S.** A simple method of finding the lime status and lime requirement of soils, based on reaction with  $\text{CaCO}_3$ . *Soil Sci.* 41, 1936 (361-365).

**631.423.3 : 631.811.4—Chaminade, R.** A method for evaluating the lime requirement of soils. *Bull. Assoc. Chim. Sucr.* 54, 1937 (49-55). [F.e.g.]



# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.423.3 : 631.811.4** -Clarens, J. ; Margulis, H. Soils. XX. Determination of lime requirements. *Bull. Soc. Chim. Fr.* 4, 1937 (583-587). B.C.A. 56 (477). [F.]
- 631.423.3 : 631.811.4** -Godlin, M. M. The determination of the lime requirements of soils. *Pedology*, No. 2, 1937 (238-252). [R.e.]
- 631.423.3 : 631.811.4** -Goy S. ; Roos, O. The extension of electrometric titration of soil to a method for the exact determination of lime requirements with reference to the physical condition of the soil. *Bodenk. Pflernähr.* 2, 1937 (166-178). [G.]
- 631.423.3 : 631.811.4** -Vincent ; Herviaux ; Coic. Determination of the lime requirements of Breton granitic soils. *C. R. Acad. Agric.* 23, 1937 (215-217). [F.]
- 631.423.3 : 631.811.4** Vincent ; Herviaux ; Coic. Measure of the lime status of soils and liming of acid soils. *C. R.* 205, 1937 (174-175). [F.]
- 631.423.3 : 631.811.4** Wehrmann, O. Methods for determining the lime requirements of soil for the requirements of field practice. *ForschDienst* 3, 1937 (88-94).
- 631.423.4** -Kononova, M. M. Soil organic matter. *Trans. Dokuchaev Inst.* 10, 1934 (39-48). B.C.A. 54 (198).
- 631.423.4** -Maurice, R. ; Martens, P. The determination of ammonia-soluble humus. *Bull. Inst. Agron. Gembloux* 3, 1934 (305-318). C.A. 29 (1567).
- 631.423.4** -Naehring, E. Humus determination in sugar-beet soils. *Deut. Zuckerind.* 59, 1934 (781-782). B.C.A. 54 (646). [G.]
- 631.423.4** -Subrahmanyam, V. ; Narayanayya, Y. V. ; Bhagvat, K. Determination of carbon in soils. *J. Indian Inst. Sci.* 17A, 1934 (197-215).
- 631.423.4** -Aleksandrova, L. N. Technique of determining reducing sugars in the soil. *Leningr. Univ. Uchen. Zap.* 1, 1935 (97-115). [R.]
- 631.423.4** -Allison, L. E. Organic soil carbon by reduction of chromic acid. *Soil Sci.* 40, 1935 (311-320).
- 631.423.4** -Alten, F. ; Wandrowsky, E. ; Knippenberg, E. Humus determination. *Ergeb. Agricht. chem.* 4, 1935 (61-69).
- 631.423.4** -Bajdalakov, V. M. Determination of humus content. Properties of humus of various soil types. *Bull. Soc. Chim. Yougoslav.* 5, 1934 (197-217). B.C.A. 54 (646). C.A. 29 (5212).
- 631.423.4** -Brissaud. Method for determining carbon by the wet process and an apparatus for determining organic matter in nitrate soils. *Bull. Soc. Chim. Fr.* 2, 1935 (306). *Ztschr. Anal. Chem.* 104 (146). [F.]
- 631.423.4** -Crowther, E. M. First report of the organic carbon committee. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (114-127).
- 631.423.4** -Kotzmann, L. G. The determination of organic carbon in soils. *Mez. g. Kúlat.* 8, 1935 (333-337). C.A. 30 (1486). [H.e.]
- 631.423.4** -Li, Ching-Kuei. Sodium hydroxide as a substitute for iodine in Robinson's sulphur dioxide method. *J. Chin. Chem. Soc.* 3, 1935 (288-292). C.A. 29 (7552).
- 631.423.4** -Martin, W. S. ; Griffith, G. A note on the determination of carbon in soils by the wet combustion method. *J. Soc. Chem. Indust.* 54, 1935 (234T-235T).

# FERTILIZERS AND GENERAL AGRONOMY

- 631.423.4—Meurice, R. ; Martens, P.** The determination of ammonia-soluble humus. *Bull. Inst. Agron. Gembloux* 4, 1935 (342-344). [F.]
- 631.423.4—Morales, E.** Application of the ter Meulen-Heslinga method to the determination of organic matter and combined water in soils. *An. Soc. Españ. Fis. Quím.* 33, 1935 (942-946). C.A. 30 (3564).
- 631.423.4—Pichard, G.** Determination of organic carbon in soils. *Ann. Agron.* 5 (n.s.), 1935 (553-558). [F.]
- 631.423.4—Pollard, C. B. ; Forsee, W. T.** Rapid determination of carbon in organic compounds. *Indust. Engng. Chem. (Anal. Ed.)* 7, 1935 (77). C.A. 29 (1362).
- 631.423.4—Robertson, I. M. ; Shewan, J. M.** A modified chromic acid method for the determination of carbon. *J. Soc. Chem. Indust.* 54, 1935 (35T-36T).
- 631.423.4—Sibirsky, W.** A method for determining the degree of humification of the soil. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (110-111).
- 631.423.4—Simon, K.** Colouring and oxidation values of humus extracts in mutual relationship. *Ztschr. Pflanz. Düng.* 39, 1935 (1-14).
- 631.423.4—Tiurin, I. V.** A method for the simultaneous determination of organic carbon and the "oxidation value" of soil organic matter. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (111-113).
- 631.423.4—Tiurin, I. V. ; Ponomareva, V. V. ; Novoselova, L. V.** Comparative study of the methods for the determination of organic carbon in soils and water extracts from soils. *Dokladye Inst. Studies Genesis Geography Soils* 1935 (139-158). [F.]
- 631.423.4—Walkley, A.** An examination of methods for determining organic carbon and nitrogen in soils. *J. Agric. Sci.* 25, 1935 (598-609).
- 631.423.4—Baker, G. O.** A study of the practicability of the Walkley and Black method for determining soil organic matter. *Soil Sci.* 41, 1936 (47-51).
- 631.423.4—Bhaskaran, T. R. ; Iyer, C. R. Harihara ; Rajagopalan, R. et al.** Determination of carbonate, organic carbon and total nitrogen in the same sample. *J. Indian Inst. Sci.* 19A, 1936 (45-52).
- 631.423.4—Crowther, E. M.** Second report of the organic carbon committee. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (82-83).
- 631.423.4—Gollan, J. ; Christen, C. ; Kenda, C.** Determination of humus in soils. *An. Assoc. Quím. Argent.* 24, 1936 (151). C.A. 31 (5084).
- 631.423.4—Gollan, J. ; Christen, C.** Evaluation of humus in soils. *Rev. Fac. Quím. Indust. Agric. Univ. Nac. Litoral* 4, 1936 (149-165). C.A. 30 (7263).
- 631.423.4—Kruglov, E. K.** Methods for determining the total carbon of carbonate soils. *Bull. SoiznNIKhI.* No. 3, 1936 (59-72). [R.]
- 631.423.4—Movsisian, E. M.** A new method of determining humus. *Khim. Sotsial. Zemled.* Nos. 7-8, 1936 (173-183). [R.]
- 631.423.4—Nostitz, A. von.** Determination of humus by means of potassium permanganate. *Bodenk. Pflernähr.* 1, 1936 (95-101). [G.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.423.4 Scheele, W.; Rowe, W. On humic acids. III. A method for quantitatively determining humic acids in extracts by conductometric titration. *Kolloid-Ztschr.* 75, 1936 (73-79). [G.]
- 631.423.4—Süchting, H.; Christmann, H. On the quantitative determination of the organic matter in soil. *Mitt. Forstwart. Forstwiss.* 7, 1936 (481-487). C.M.R. 17 (10). [G.]
- 631.423.4 Vincent; Sarazin. Determination of carbon in the wet way in soils and vegetable matter. *Bull. Assoc. Franç. Ét. Sol* 2, 1936 (291-293). F.
- 631.423.4 Acharya, G. N. Interference of soil in the estimation of furtural. *Curr. Sci.* 5, 1937 (426-427).
- 631.423.4 Gayley, C. T. Determination of nitrogen and carbon in the same sample. *Indust. Engng. Chem. (Anal. Ed.)* 9, 1937 (422-423).
- 631.423.4—Pozdena, L. Colorimetric investigation of humus and the determination of humus. *Bodenk. PflErnähr* 3, 1937 (315-334). [G.]
- 631.423.4—Puri, A. N.; Sarup, A. Studies in soil humus: I. Estimation of soil humus by oxidation with alkaline permanganate. *Soil Sci.* 44, 1937 (323-327).
- 631.423.4 Scheele, W. A method for the quantitative determination of humic acids in material containing humus. *Bodenk. PflErnähr* 3, 1937 (188-195). [G.]
- 631.423.4: 547.456 Bengtsson, N. Determination of pentosans in samples containing nitrates and nitrites. *LantbrHögsk. Ann.* 3, 1936 (169-178). Swee.
- 631.423.4: 553.97 Feustel, I. G. Fractionation and titration of the acidic constituents of peat. *Trans. 6th Comm. Int. Soc. Soil Sci. Zurich* 35, 36. F.
- 631.423.4: 631.417.745.881 Acharya, G. N. Estimation of cellulose in the soil. *Proc. Soc. Biol. Chem. India* 1, 1936 8.
- 631.423.4: 632.951.22 Higgins, J. C.; Pollard, A. G. Determination of carbon disulphide especially in soil. *J. Soc. Chem. Indust.* 56, 1937 (1221-1271).
- 631.423.5—Sokolov, N. I. Analysis of water extracts of soils. *Trans. Dokuchay. Inst.* 10, 1934 36. B.C.A. 54 (198).
- 631.423.5—Abresch, K. Rapid determination of alkalies. *Chem. Fabr.* 8, 1935 380-381. B.C.A. 54 (1959).
- 631.423.5 Bruin, P.; Hare, J. ten. Determination of magnesium carbonate and calcium carbonate in soil. *Chem. Weekbl.* 72, 1935 (375-378). B.C.A. 54 (740).
- 631.423.5 Puri, A. N.; Anand, B. A simple type of electrical salinometer for estimating soluble salts and irrigation waters. *Soil Sci.* 44, 1937 (241-244).
- 631.423.5: 631.437.1 Khalizev, A. The conductometric method in agrochemistry. *Khim. Sotsial. Zemled.* 2, 1932 (31). Z.P.D. 38 (182). R.
- 631.423.5: 631.437.1—Aleksandrov, B. P.; Kurtener, A. V. Measurement of the rapidity of the diffusion of ions in soils. *Tруды Seht. Fiz. Poche Fiz. Agron. Inst.* No. 1, 1935 (131). R.
- 631.423.5: 631.437.1—Du Toit, M. S.; Perold, I. S. The factors which influence the use of the conductivity of soil suspensions as a measure of fertility. *Soil Sci.* 39, 1935 (59-74).

## FERTILIZERS AND GENERAL AGRONOMY

- 631.423.5: 631.437.1** -Davydov, G. K. Determination of the degree of soil salinity by the electrical conductivity method. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (428-430). [R.]
- 631.423.5.005** -Smolik, L. New carbonate-meter for pedological purposes. *Sborn. Čsl. Akad. Zeměd.* 11, 1936 (261-265). [Cze.]
- 631.423.6.005** -Singh, B. N.; Mathur, P. B. A new apparatus for carbonic acid estimation in soils. *Curr. Sci.* 4, 1935 (408-409). C.A. 30 (3141).
- 631.423.6.005** -Singh, B. N.; Mathur, P. B. Apparatus for the measurement of  $\text{CO}_2$  evolved during the decomposition of organic matter in soils. *J. Amer. Soc. Agron.* 28, 1936 (423-426). C.A. 30 (5340).
- 631.423.6.005** -Singh, B. N.; Mathur, P. B. A new apparatus for carbonic acid estimations in soil. *Soil Sci.* 41, 1936 (433-439).
- 631.423.7** Kedrov-Zikhman O.; Ossina, A. Tests of the comparative value of different methods of determining hydrolytic soil acidity. *Khim. Sotsial. Zemled.* 4, 1933 (71-78). *Bied. Zbl.* 6 (300). [R.]
- 631.423.7** Varfolomeev, I. V. Determination of the absorbing capacity of soil. *Trudy Tsentr. Nauch. Inst. Sakh. Prom. (Moscow)*, No. 8, 1932 (43-49). B.C.A. 54 (71).
- 631.423.7** Walker, R. H. Base exchange in Iowa soils. *Iowa Agric. Expt. Sta. Rept.* 1933 (107). C.A. 29 (2637).
- 631.423.7** Deines, G. Comparative investigations of the determination of the "S" value of forest soils and their forms of humus. IV. *Ztsch. Pflanz. Düng.* 36A, 1934 (156-195). [G.]
- 631.423.7** Godlin, M. M. Technique of determining the adsorption capacity of soils. *Trans. Int. Soc. Soil Sci. Soviet Sect.* 2nd Comm. 1934 (112-120). [G.]
- 631.423.7** Bär, A. L. S. On the degree of saturation. *Landbouwk. Tijdschr.* 47, 1935 (270-275). [Du.]
- 631.423.7** Beckley, V. A. Preliminary note on a rapid micro-method of determining exchangeable bases. *Proc. 2nd Conf. East Afric. Agric. Chem.* 1934. Abs. 13, 1935 (60).
- 631.423.7** Chuen, Wong Po. The determination of base exchange in the soil complex according to Vageler-Alten. *Kühn-Arch.* 39, 1935 (159-183).
- 631.423.7** Greene, H. Soil water ratios in base exchange. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (63-65).
- 631.423.7** Lavollay, J. On the determination of the base exchange capacity of soils by means of copper. *Ann. Chim. Anal.* 17, 1935 (229-230). *Ann. Agron.* 5 (716). [F.]
- 631.423.7** Moller, J. The exchange of ions with respect to agricultural chemistry. *Kem. Maanedssbl.* 16, 1935 (85-88). C.A. 30 (2678).
- 631.423.7** -Nagel, W. The determination of T- and V-values according to different methods. *Kühn-Arch.* 39, 1935 (276-281). [G.]
- 631.423.7** Olendsky, V. I. A method of determining exchangeable bases in soil. *Inst. Tab. Makh. Prom.* No. 1, 1935 (26-29). *Pedology* 1936 (903). [R.]

# BIBLIOGRAPHY OF SOIL SCIENCE

**631.423.7** Puri, A. N. Estimation of replaceable Na and K, exchange capacity, and degree of alkalization in alkali soils by ammonium carbonate extraction. *Soil Sci.* 40, 1935 (249-253).

**631.423.7**—Puri, A. N. A new method of estimating exchangeable bases in soils. *Soil Sci.* 40, 1935 (159-163).

**631.423.7** Puri, A. N. A simple method of estimating calcium and other bases in non-calcareous soils. *Soil Sci.* 40, 1935 (383-390).

**631.423.7** Rogai, F.; Alfieri, G. The method of "absolute neutralization" for the determination of exchangeable bases of soils. *Ist. Agrar. Pisa Boll.* 11, 1935 (515-526). C.A. 30 (6489). [J.]

**631.423.7** Serouikov, V. A.; Kazantsev, A. D. Determination of the hydrolytic acidity of soils by different methods. *Khim. Sotsial. Zemled.* No. 4, 1935 (68-71). [R.]

**631.423.7** Shaw, W. M.; MacIntire, W. H. The determination of absorbed bases by boiling with ammonium chloride and the utility of the procedure in related soil investigations. *Soil Sci.* 39, 1935 (359-375).

**631.423.7** Puri, A. N. Estimating exchangeable calcium and other cations in soils. *Soil Sci.* 42, 1936 (47-59).

**631.423.7** Vasiladis, C. Remarks on the steaming method of removing the absorbed cations from the soil complex. *Pflernähr.* 3, 1937 (234-236). [G.]

**631.423.7:631.411.2** Kurchatov, P. A.; Skokov, M. F.; Pil, J. F. Comparative evaluation of methods of determining adsorptively bound calcium in carbonate soils. *Trudy No. 3*, 1934 (378-385). [R.]

**631.423.7:631.411.2** Sushko, S. Y. The determination of the exchange capacity and exchangeable calcium in carbonate and gypsum soils. *Khim. Sotsial. Zemled.* 2, 1934 (51). Z.P.D. 41 (238). [R.]

**631.423.7:631.411.2** Arany, S. A. On the chemical composition of the soils of the Hungarian Great Plain. III. Conditions of alkalisation. B. Exchangeable bases. *Mezőg. Kutat.* 8, 1935 (105-115). [H.]

**631.423.7:631.411.2** Ostroumov, B. V. Gedron's potash method as a routine method for determining the absorption capacity of carbonate soils. *Khim. Sotsial. Zemled.* No. 6, 1935 (61-71). [R.]

**631.423.7:631.411.2** Pil, Y. F.; Agoshkova, T. N.; Galkovich, R. M. New methods of determining exchange capacity in carbonate soils. *Vitim. Shorn. Rab. Sekt. Agrotech.* No. 119, 1935 (99-107). [R.]

**631.423.7:631.411.2** Shmelev, D. I. Methods of estimating the exchangeable bases and the base-exchange capacity of carbonate and saline soils. *Bull. Sov. NTKhI.* No. 2, 1936 (29-52). [R.]

**631.423.7:631.411.2**—Sigmond, A. A. J. de; Iyengar, M. A. Sharma. The determination of exchangeable bases and of the S-value in soils containing both calcium carbonate and calcium sulphate. *Soil Res.* 4, 1935 (217-222).

**631.423.7:631.413.41.2** Godlin, M. M. Determination of the exchange capacity of absorption in soils. *Trudi Inst. Agriogrant. Khim.* 1, 1936 (28-46). [U.r.e.]

**631.423.7:631.413.41.2** Meurice, R.; Legros, R. Degree of saturation of two soils. *Bull. Inst. Agron. Gembloux* 5, 1936 (315-324). [F.d.u.r.]

## FERTILIZERS AND GENERAL AGRONOMY

- 631.423.7:631.413.41.2** Thomas, W. Properties of the hydroxyl groups of clay as a basis for characterizing a mineral soil. *Soil Sci.* 42, 1936 (243-259).
- 631.423.7:631.413.41.2** Vinokurov, M. A. A method for dividing the total exchange capacity of soil into its components. *Pedology* No. 3, 1937 (354-358). [R.]
- 631.423.7:631.413.41.2** Vinokurov, M. A. Method of separating the total exchange capacity of the soil into the exchange capacities of the organic and mineral parts of the soil absorbing complex. *Khim. Sotsial. Zenit.* No. 6, 1937 (92-95). [R.]
- 631.423.7:631.413.42** Piper, C. S. Exchangeable hydrogen in soils. *Aust. J. Coun. Sci. Indust. Res.* 9, 1936 (113-124).
- 631.423.7:631.416.4** Antipov-Karataev, I. N.; Klein, Y. N.; Krasikov, K. N. *et al.* The methods of investigating the mobile forms of potassium in podzolic, chestnut-brown and chernozem soils. *Trans. Dokuchaev Soil Inst.* 12, 1935 (233-296). [C.A. 31 (5492).] [R.]
- 631.423.7:631.416.4** Terlikowski, F.; Sozanski, S. Technique of a simplified determination of exchangeable potassium in the soil. *Rocz. Nauk Roln.* 37, 1936 (1-8). [P.G.]
- 631.423.7:631.416.5** Godlin, M. M. Method for determining the solonchokosity of soils. *Trudi Inst. Agrokrom. Khim.* 1, 1936 (15-26). [U.R.]
- 631.423.7:631.437.1** Schorstein, H. The conductometric course of the reaction of the fluorine ion and its application to soil science problems. *Bodenk. Pfl. ernahr.* 3, 1937 (89-107). [G.]
- 631.423.7:631.437.2** Maksimow, A. The electrofiltration of soils. *Rocz. Nauk Roln.* 34, 1935 (27-94). [B.C.A. 55 (34).] [P.G.]
- 631.423.7:631.437.2** King, H. H.; Caldwell, M. J.; Perkins, A. T. Replaceable base determination by electromigration. *Soil Sci.* 43, 1937 (311-316).

## 631.425 MECHANICAL ANALYSIS

- 631.425** Loebe, R.; Köhler, R. Reliability of mechanical analyses of soils. *Mitt. Lab. Preuss. Geol. Landesanst.* 1933, Nos. 18-48. [B.C.A. 53 (1025).]
- 631.425** Bouyoucos, G. J. A comparison between the pipette method and the hydrometer method for making mechanical analyses of soil. *Soil Sci.* 38, 1934 (335-343).
- 631.425** Correns, C. W. Representation of the distribution of soil particle diameters. *Zf. Min. Geol. Abt. A* 1934 (321). [P.L.S. 10 (7).] [G.]
- 631.425** Coutts, J. R. H. Mechanical analyses of some Natal soils. *Trans. Int. Soc. Soil Sci. Comm. I, Versailles*, 1934 (41-46). [E.]
- 631.425** Dreyfus, M. Methods for the separation of the clay fraction of sedimentary rocks. *C.R.* 199, 1934 (1631-1633). [F.]
- 631.425—Hissink, D. J.** Some remarks on methods of mechanical analysis of the soil. *Trans. Int. Soc. Soil Sci. Comm. I, Versailles*, 1934 (19-27). [F.]
- 631.425** Loughry, F. G.; Conrey, G. W. The use of sodium oxalate and carbonate in dispersing soils for mechanical analysis. *Trans. Int. Soc. Soil Sci. Comm. I, Versailles*, 1934 (29-40). [E.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.425—Morales, E. Method of mechanical analysis of soil. *Trans. Int. Soc. Soil Sci. Comm. I, Versailles*, 1934 (79-81). [F.]
- 631.425—Nostitz, A. von. Is v. Krudner's "Waldschlamm-analyse" also suitable for agricultural conditions. *Ztschr. Pflanz. Düng.* 36A, 1934 (335-342). [G.]
- 631.425—Novak, V. Principles for grouping the particle sizes in the mechanical analysis of soil with particular regard to the coarser fractions. *Trans. Int. Soc. Soil Sci. Comm. I, Versailles* 1934 (65-78). [G.]
- 631.425—Robinson, G. W. The dispersion of soils in mechanical analysis. *Trans. Int. Soc. Soil Sci. Comm. I, Versailles*, 1934 (13-18). [E.]
- 631.425—Boguslawski, E. von. A method for determining sand in soil samples. *Ztschr. Pflanz. Düng.* 41, 1935 (1-8). [G.]
- 631.425—Bouyoucos, G. J. An improvement in the hydrometer method for making mechanical analyses of soils. *J. Amer. Soc. Agron.* 27, 1935 (319-320).
- 631.425—Demolon, A.; Bastisse, E. The dispersion of clay colloids. Application to their extraction. *Ann. Agron.* 5 n.s., 1935 (1-15). [F.]
- 631.425—Demolon, A.; Bastisse, E. Results given by the citrate method in the mechanical analysis of soils and sediments. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (33-34). [F.]
- 631.425—Gollan, J. Nomogram for the correction of mechanical analyses of soils. *Soil Res.* 4, 1935 (199-206). [F.]
- 631.425—Gračanin, M. Temperature effects in the mechanical analysis of soil. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (34-38). [G.]
- 631.425—Hrdina, J. Influence of the dimensions of sedimentation cylinders on the amount of the clay fraction in soil. *Školsk. Čsl. Akad. Zmládk.* 10, 1935 (44-51). [Cz.]
- 631.425—James, R. L. A simpler method of expressing the mechanical analysis of many common soils. *Soil Sci.* 39, 1935 (271-275).
- 631.425—Loebe, R.; Kohler, R.; Abel, A. Comparison of methods for determination of clay content of soils. *Mitt. Lab. Preuss. Geol. Landesanst.* 21, 1935 (1-21). C. A. 30 (6104). [G.]
- 631.425—Novak, V. Brief summary of the development of mechanical analysis of soil. *Trans. 3rd Int. Cong. Soil Sci.* 2, 1935 (23-36). [G.]
- 631.425—Patty, R. L. Determining colloids in soil for rammed earth construction. *Agric. Engng.* 16, 1935 (275-276).
- 631.425—Petersen, W. Hydrometer method for particle-size determination. *Sprechsaal* 68, 1935 (423-427). C. A. 30 (3141). [G.]
- 631.425—Popovat, M. Mechanical analysis of soil. Aim and procedures. *Inst. Geol. Român. Stud. Tech.* 3, 1935, pp. 30. [F.]
- 631.425—Puri, A. N. The ammonium carbonate method of dispersing soils for mechanical analysis. *Soil Sci.* 39, 1935 (263-270).
- 631.425—Richardson, E. G. A photoelectric method for mechanical analysis. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (40-41).
- 631.425—Ryzhov, S. N. Contribution to the problem of preparing carbonate soils for mechanical analysis. *Bull. SovuzNTKhI*, No. 7, 1935 (96-104).
- 631.425—Schumacher, K. Mechanical analysis of soils by means of the sedimentation apparatus of Vendl. *Math. Naturw. Anz. Ungar. Akad. Wiss.* 52, 1935 (188-202). C. A. 29 (5968).

# FERTILIZERS AND GENERAL AGRONOMY

- 631.425 Sreenivasan, A. The present position of the mechanical analysis of soils. *Madras Agric. J.* 23, 1935 (443-451). C.A. 30 (1165).
- 631.425 Stanganelli, M. Method of mechanical analysis of soil. *Sta. Sper. Granicolt. "Benito Mussolini" Catane Pub. No. 5*, 1935, pp. 91. [J.]
- 631.425 Valin, J. Remarks on the mechanical analysis of soil. *Bull. Assoc. Franç. Ét. Sol.* 1, 1935 (43-46). [F.]
- 631.425 Volobuev, V. R. A continuous mechanical analysis method by means of a siphon sedimentometer. *Pedology No. 1*, 1935 (66-70). [R.]
- 631.425 Wehrmann, O.; Brückner, H. Soil research. *Ztschr. Anal. Chem.* 101, 1935 (374-377).
- 631.425 Balabai, J. J. Continuous mechanical soil analysis. *Pedology No. 2*, 1936 (299-398). [R.]
- 631.425 Belousova, V. T. Determination of the mineralogical composition of the fine fractions (<0.01 mm) of sedimentary rocks and soils by the immersion method. *Trans. Dokuchaev Inst.* 13, 1936 (31-44). [R.]
- 631.425 Bouyoucos, G. J. Directions for making mechanical analyses of soils by the hydrometer method. *Soil Sci.* 42, 1936 (225-228).
- 631.425 Camargo, T. de; Vageler, P. Soil analysis. I. Physical analysis. *Inst. Agron. São Paulo Bol. Tech.* 24, 1936, pp. 78. [Sp.]
- 631.425 Chakraborty, J. N. The applicability of alkaline permanganate for oxidation of organic matter in soils for mechanical analysis. *Soil Sci.* 42, 1936 (261-266).
- 631.425 Edlefsen, N. E.; Cole, R. C. A comparison of the specific gravity balance and the pipette methods of determining density of soil suspensions. *Soil Sci.* 42, 1936 (131-135).
- 631.425 Figurovsky, N. A. Sedimentometric analysis of suspensions. *Zavod. Lab.* 5, 1936 (829-840). [R.]
- 631.425 Kharin, S. E.; Smirnova L. G. Application of nephelometry for semidisperse analysis. *Kolloid. Zh.* 2, 1936 (543-548). C.A. 31 (1274). [R.]
- 631.425 Maurice, R.; Legros, R. Physical analysis of a loam soil at Gembloux. *Bull. Inst. Agron. Gembloux* 5, 1936 (310-314). [F. du g.c.]
- 631.425 Puri, A. N. Dispersion of soil for mechanical analysis by sodium carbonate or sodium oxalate treatment. *Soil Sci.* 42, 1936 (267-272).
- 631.425 Walkley, A. A note on the use of caustic soda as a dispersing agent in the mechanical analysis of soils. *Aust. J. Coun. Sci. Indust. Res.* 9, 1936 (321-322).
- 631.425 Zunker, F. Hydrometer method with a layered liquid for determining the particle size and specific surface of soils and other powdery materials. *Kulturtech.* 39, 1936 (261-294). [G.]
- 631.425 Beater, B. E. Improved technique in grading coarse and fine sands during mechanical analysis of soils. *J. Agric. Sci.* 27, 1937 (123-125).
- 631.425 Bouyoucos, G. J. A sensitive hydrometer for determining small amounts of clay or colloids in soils. *Soil Sci.* 44, 1937 (245-246).



## BIBLIOGRAPHY OF SOIL SCIENCE

**631.425**—**Bouyoucos, G. J.** The high degree of accuracy of the improved soil hydrometer used in the mechanical analysis of soils. *Soil Sci.* 44, 1937 (315-317).

**631.425**—**Hoffmann, E.** Note on mechanical analysis by means of Mohr's balance. *Kolloid-Ztschr.* 79, 1937 (314).

**631.425**—**Puri, A. N.; Sarup, A.** The destruction of organic matter in the preliminary treatment of soils for mechanical analysis. *Soil Sci.* 44, 1937 (87-89).

**631.425**—**Shaw, T. M.; Alexander, L. T.** A note on mechanical analysis and soil texture. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (303-304).

**631.425**—**Trochain, J.** Graphic representation of results of physical and granular soil analyses. *C.R.* 204, 1937 (1671-1674). *C.A.* 31 (5919). [F.]

**631.425**—**Truog, E.; Taylor, J. R., Jr.; Pearson, R. W., et al.** Procedure for special type of mechanical and mineralogical soil analysis. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (101-112).

**631.425:631.414.2**—**Tiulin, A. F.** A fuller description of the character of colloidal clay separated during mechanical analysis of soil. *Trans. Int. Soc. Soil Sci. Soviet Sect. 1st Comm.* 1934 (57-68). [F.]

**631.425:631.414.2**—**Tiulin, A. F.** Peptization analysis of soil colloids. *Kolloid-Ztschr.* 70, 1935 (207-211).

**631.425:631.414.2**—**Tiulin, A. F.** A more detailed characterization of "clay" separated in the pre-treatment of soils for mechanical analysis. *Trans. Soviet Sect. Int. Soc. Soil Sci.*, Vol. 5, 1936 (483-493). [R.]

**631.425:631.414.2**—**Truog, E.; Taylor, J. R., Jr.; Simonson, R. W., et al.** Mechanical and mineralogical subdivision of the clay separate of soils. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (175-179).

**631.425:631.432.3**—**Rozov, L. P.** A system of mechanical analyses instead of a single analysis as a method of characterizing the hydrophysical properties of soil. *Trans. Int. Soc. Soil Sci. Soviet Sect. 1st Comm.* 1934 (154-159). [F.]

**631.425:631.434**—**Bouyoucos, G. J.** A method for making mechanical analysis of the ultimate natural structure of soils. *Soil Sci.* 40, 1935 (481-485).

**631.425:631.434**—**Bouyoucos, G. J.** Simple and rapid methods for ascertaining the existing structural stability of soil aggregates. *J. Amer. Soc. Agron.* 27, 1935 (222-227).

**631.425:631.434**—**Shaw, C. F.** Field textures and physical composition determined by two methods. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (42-46).

**631.425:631.434**—**Tsyganov, M. S.** Comparative study of methods of wet aggregate analysis. *Pedology* No. 2, 1935 (219-229). [R.]

**631.425:631.434**—**Vilensky, D. G.** The technique of the investigation of soil tenacity in soil erosion studies. *Pedology* Nos. 5-6, 1935 (789-796). [R.]

**631.425:631.434**—**Lakin, H. W.; Shaw, T. M.** The relation of mechanical analysis to field textural classification. *Amer. Soil Surv. Bull.* 17, 1936 (112-115).

# FERTILIZERS AND GENERAL AGRONOMY

**631.425 : 631.434 Meyer, L. ; Rennenkampff, U. v.** New apparatus and method for the automatic carrying out of crumb analysis according to Tiulin, and proposals for the determination of the crumb constituents, crumb size and the crumb formation tendency of soil. *Ztschr. Pflanz. Düng.* 43, 1936 (268-280). [G.]

**631.425 : 631.434 Nowitz, A. von.** The technique of sieve and elutriation analyses of soils. *Ztschr. Pflanz. Düng.* 44, 1936 (256-264). [G.]

**631.425 : 631.434 Tiulin, A. F.** Methods of quantitative and qualitative determination of soil aggregates. *Trans. Soviet Sect. Int. Soc. Soil Sci.*, Vol. 5, 1936 (29-42). [R.]

**631.425 : 631.434 Yoder, R. E.** A direct method of aggregate analysis of soils and a study of the physical nature of erosion losses. *J. Amer. Soc. Agron.* 28, 1936 (337-351).

**631.425 : 631.434 Kvasnikov, V. V. ; Timofeev, A. T.** Determining the wetting resistance of soil aggregates. *Pedology* No. 1, 1937 (65-81). [R.]

**631.425 : 631.434 Tsyganov, M. S.** A device for automatic bathing of the soil during wet aggregate analysis. *Pedology* No. 3, 1937 (420-423). [R.]

**631.425 : 631.445.53 Okhotin, V. V. ; Konstantinova, P. K.** Determination of the clay fraction in solonchets by swelling. *Physico-Mechanical Properties of Subsoils, Cont. Inst. Roads and Machines, Leningrad*, 1935 (64-73). [R.]

**631.425 : 631.445.73 Cerighelli, R.** The mechanical analysis of Indochina soils. *Trans. Int. Soc. Soil Sci. Comm. I, Versailles*, 1934 (57-64). [F.]

**631.425 : 631.445.73 Chakraborty, J. N.** The mechanical analysis of lateritic soils. III. A new method using alkaline permanganate for oxidation of organic matter. *Indian J. Agric. Sci.* 5, 1935 (41-50).

**631.425 : 631.445.73 Chakraborty, J. N. ; Sen, A.** The mechanical analysis of lateritic soils. II. A note on the applicability of the hypobromite method. *Indian J. Agric. Sci.* 5, 1935 (39-40).

**631.425.005 Vaidhianathan, V. I.** An optical lever siltometer. *Punjab Irrig. Res. Inst. Res. Pub.* 5, No. 1, 1933, pp. 17. [C.A.] 29 (5570).

**631.425.005 Cole, R. C. ; Edlefsen, N. E.** A sedimentation tube for analysing water-stable soil aggregates. *Soil Sci.* 40, 1935 (473-479).

**631.425.005 Kniazev, V. I.** Use of the Laval centrifuge and its modification by A. I. Moshev in studying the mechanical composition of soil. *Trudy Gdronz. Inst. Udob. Leningr. Lab.* 1935 (137-145). [R.]

**631.425.005 Puri, A. N.** A siltometer for studying size distribution of silts and sands. *Punjab Irrig. Res. Inst. Res. Pub.* 2, No. 7, 1935, pp. 6.

**631.425.005 Vasiliev, A. M.** A new apparatus for carrying out mechanical analysis of soil with the pipette method. *Pedology* No. 1, 1935 (72-79). [R.G.]

**631.425.005 Godlin, M. M.** Apparatus for determining the mechanical composition of soils. *Trudy Inst. Agrogrunt. Khim.* 1, 1936 (48-59). [U.R.G.]

## BIBLIOGRAPHY OF SOIL SCIENCE

**631.425.005 Golubev, I. F.** Apparatus for the ultra-mechanical analysis of soil. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (510-512). [R.]

**631.425.005 Golubev, I. F.** Apparatus for the routine analysis of the mechanical composition of soils. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (513-518). [R.]

**631.425.005 Richardson, E. G.** A photo-electric apparatus for delineating the size frequency curve of clays or dusts. *J. Sci. Instrum.* 13, 1936 (229-233).

**631.425.005 Robertson, I. M.; Stewart, A. B.** A mechanical shaker. *J. Soc. Chem. Indust.* 55, 1936 (120T).

**631.425.005 Vendl, M.; Romwalter, A.** A simple elutriating balance with hand control and automatic recording. *Neues Jahrb. Min. Geol. Beilage* 71A, 1936 (524-552). [C.A.] 31 (3611).

## 631.427 BIOLOGICAL ANALYSIS

**631.427.1 Jacot, A. P.** Soil structure and soil biology. *Ecology* 17, 1936 (359-379).

**631.427.1.005 Ladell, W. R. S.** A new apparatus for separating insects and other arthropods from the soil. *Ann. Appl. Biol.* 23, 1936 (862-879).

**631.427.2 Richter, A.; Werner, A.** The quantitative determination of fungus flora in the soils of the Lower Volga region. *J. Expt. Land. S.-O. Europ. Russ.* 9, 1931. *Biol. Zh.* 64 (111).

**631.427.2 Demeter, K. J.; Mossel, H.** The application of Chodolny's microscopical plate method to soil bacteriological studies. *Zbl. Bakt. Abt. 88*, 1933 (384-393). *Biol. Zh.* 65 (236).

**631.427.2 Volkert, H.** Investigations on the biological activity of forest soils in relation to soil acidification and bulking, and a contribution to biological methods of examining soils. *Mitt. Forstunt. Forstwiss.* 1, 1933 (1-32). [G.]

**631.427.2 Isakova, A.** Methods of microbiological investigations of the soil. *Bull. Acad. Sci. (U.S.S.R.)* No. 7, 1934 (1007-1030). [R.]

**631.427.2 Kriuchkova, A. P.** The ecological variations of microorganisms in relation to diagnostic agronomy. *Mikrobiologia* 3, 1934 (232-258). *Bull. Inst. Past.* 34 (316).

**631.427.2 Niklas, H.; Miller, M.** The counting of soil bacteria. *Zbl. Bakt.* 90, 1934 (127-130). *Biol. Zh.* 6 (113). [G.]

**631.427.2 Ziemińska, J. M.** Direct method applied to the study of the decomposition of organic matter in the soil. *Rocz. Nauk Roln.* 33, 1934 (23-31). [P.]

**631.427.2 Chodolny, N. G.** Methods of a direct study of soil microflora. *Trans. Int. Soc. Soil Sci. Soviet Sect. A*, 1935 (97-109).

**631.427.2 Chodolny, N. G.** Methods of direct observation of soil microflora. *Mikrobiologia* 4, 1935 (153-165). [R.]

**631.427.2 Meyer, R.** The determination of microorganisms on Chodolny soil plaques. *Arch. Mikrobiol.* 7, 1935 (461-470). *Bull. Inst. Past.* 35 (450).

**631.427.2 Nakhimovskaya, M.** Some peculiarities of the technique of inserting slides into the soil according to Rossi-Chodolny. *Mikrobiologia* 4, 1935 (372-378). [R.]

# FERTILIZERS AND GENERAL AGRONOMY

**631.427.2** —**Rossi, G. ; Kao, Wang Tsu.** New studies for a bacterial theory of agricultural soils. *Soil Res.* 4, 1935 (316-349) B.C.A. 54 (1959). [G.f.]

**631.427.2** —**Winogradsky, S.** The method in soil microbiology as illustrated by studies on Azotobacter and the nitrifying organisms. *Soil Sci.* 40, 1935 (59-76).

**631.427.2** —**Ziemlecka, J.** The use of a modified Rossi-Cholodny technic for studying the organisms that decompose certain organic compounds in soil. *Zbl. Bakt.* 91, 1935 (389-394).

**631.427.2** —**Cholodny N. G.** Investigation of soil microflora by germinating soil dust. *Mikrobiologia* 5, 1936 (159-166). Re.

**631.427.2** —**Hildebrand, A. A. ; Koch, L. W.** A microscopical study of infection of the roots of strawberry and tobacco seedlings by microorganisms of the soil. *Canad. J. Res.* 14C, 1936 (11-20).

**631.427.2** —**Korneeva, N. P.** Evaluation of Cholodny's microbiological method with control of the character of plough land. *Shorn. Rab. VNIIS*, 1936 (553-555). [R.]

**631.427.2** —**Telegdy Kovats, L.** Mathematical methods in scientific research. I. Determination of the utility of agar nutrient media. *Mezőg. Kutat.* 9, 1936 (95-101). [H.g.]

**631.427.2** —**Rippel, A.** General principles of microbiological soil investigations. *ForschDienst.* 1, 1936 (28-33). [G.]

**631.427.2** —**Rossi, G. ; Riccardo, S., et al.** Direct microscopic and bacteriological examination of the soil. *Soil Sci.* 41, 1936 (53-66).

**631.427.2** —**Madhok, M. R.** Synthetic soil as a medium for the study of certain microbiological processes. *Soil Sci.* 44, 1937 (319-322).

**631.427.2** —**Pozdeeva, I. P. Lange.** A new method for studying microorganisms under natural soil conditions. *Mikrobiologia* 6, 1937 (217-223). Re.

**631.427.2 ; 631.461.3** —**Luchetti, G.** Determination of the nitrifying power of soils. *Boll. Soc. Int. Microbiol. Sez. Ital.* 6, 1934 (263-269). C. A. 29 (1560). [F.]

**631.427.2 ; 631.461.5** —**Batchelor, H. W.** Some physical factors controlling the accuracy in estimating the number of nitrogen-fixing bacteria in soil. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (113-117).

**631.427.2 ; 631.466.1** —**Jensen, H. L.** The microbiology of Australian soils. III. The Rossi-Cholodny method as a quantitative index of the growth of fungi in the soil, with some preliminary observations on the influence of organic matter on the soil microflora. *Proc. Linn. Soc. N.S.W.* 60, 1935 (145-154). C. A. 30 (557).

**631.427.2 ; 631.467.1** —**Dixon, A.** The effect of different media on soil protozoan counts. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (179-180).

**631.427.3/4** —**Stöckli, A.** Comparison of the azotobacter method with the Mitscherlich method. *Landw. Jahrb. Schweiz* 51, 1937 (233-247). [G.f.]

**631.427.3/4 ; 631.423** —**Lebediantsev, A. N. ; Smirnov, N. D.** Different methods of determining the fertilizer requirements of soil and their applicability to the main soil types of the U.S.S.R. *Trans. Int. Soc. Soil Sci. Soviet Sect. 4th Comm.* 1933 (43-66). [G.]

# BIBLIOGRAPHY OF SOIL SCIENCE

**631.427.3 4 : 631.423** —Mitscherlich, E. A. The determination of the nutrient content and nutrient requirement of the soil with preliminary results of our co-operative study. *Trans. 3rd Int. Cong. Soil Sci.* 2, 1935 (95-112). [G.]

**631.427.3 4 : 631.423** Sartory, A.; Sartory, R., et al. Comparative tests of the amount of phosphate and potash in soil with Hilgard's chemical method, Neubauer's biological method and Niklas's method with the use of *Stenotaphrum nigra*. *C.R.* 200, 1935 (1797-1799). [F.]

**631.427.3 4 : 631.423** Schorstein, H. Comparative plant nutrient experiments on some heavy soils. *J. Landw.* 83, 1935 (219-222). [G.]

**631.427.3 4 : 631.423** Thun, R. The chief methods of determining soil nutrients and their value in practical agriculture. *Biol. Zbl.* 6, 1935 (161-176).

**631.427.3** Kisser, J.; Lettmayr, K. Absorption experiments with sawdust. *Ztschr. Pflanz. Dung.* 29A, 1933 (189-195). [C.A.] 52, 562.

**631.427.3** Emmert, E. M. Tests for nutrients in conducting tissue as indicators of the nutritional status in horticultural crops. *Proc. Amer. Soc. Hort. Sci.* 32, 1934 (604-609). [C.A.] 29 (7555).

**631.427.3** Emmert, E. M. Tests for phosphate, nitrate and soluble nitrogen in conducting tissue of tomato and lettuce plants, as indicators of availability and yield. *Kv. Agric. Expt. Sta. Circ.* 43, 1934, pp. 40. [C.A.] 54, 742.

**631.427.3** Chapman, H. D. Inorganic phosphate in green plant tissue as a measure of phosphate availability. *Soil Sci.* 39, 1935 (111-122).

**631.427.3** Cutler, J. V.; Malherbe, I. de V. The Neubauer-Schneider method for determination of soil fertility under South African conditions. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (232-235).

**631.427.3** Emmert, E. M. New methods for the determination of the availability of nitrogen and phosphorus to plants. *J. Amer. Soc. Agron.* 27, 1935 (1-7).

**631.427.3** Gardner, R.; Robertson D. W. Use of sugar beet petioles as indicators of soil fertility needs. *Calif. Agric. Expt. Sta. Tech. Bull.* No. 14, 1935. [U.S.] 30 (489).

**631.427.3** Golodkovsky, L. L. The seedling method for the determination of the fertilizer requirements of soils. *Izv. Nauch.-Nikhl.* No. 6, 1935 (3-57). [C.A.] 30 (7266).

**631.427.3** Hardy, F.; McDonald, J. A.; Rodriguez, G. Leaf analysis as a means of diagnosing nutrient requirements of tropical orchard crops. *J. Agric. Sci.* 25, 1935 (610-627).

**631.427.3** Kühn, S. Investigations on the determination of the quantities of readily available potassium and phosphorus in soils. *Kunstl. Koldem.* 38, 1935, pp. 18.

**631.427.3** Lagatu, H.; Maume, L. An example of non-availability of potassium, determined by foliar diagnosis. *C.R. Acad. Agric.* 21, 1935 (232-241). [F.]

**631.427.3** Levitsky, A. Y.; Leslukova, A. A. Plant analyses as a method of determining the fertilizer requirements on a production basis. *Khim. Selsk. Zemled.* No. 2, 1935 (48-58). [C.A.] 30 (801).

## FERTILIZERS AND GENERAL AGRONOMY

- 631.427.3—Mitchell, H. L.** A method for determining the nutrient needs of shade trees with special reference to phosphorus. *Black Rock Forest Pap.* 1, 1935, pp. 3.
- 631.427.3 Mitscherlich, E. A.** Determining the plant nutrient content of soil. *Landw. Jahrb.* 82, 1935 (301-318). G.
- 631.427.3—Poshlman, J. M.** Some limitations of plant juice analyses as indicators of the nutrient needs of plants. *J. Amer. Soc. Agron.* 27, 1935 (195-207).
- 631.427.3 Saint, S. J.** Juice analyses in relation to fertilizer requirements of Barbados soils. *Proc. Int. Soc. Sug. Cane Tech.* 5, 1935 (616-623). C.A. 30 (3568).
- 631.427.3—Saksagansky, L. B.; Agamian, S. A.** A new method for determining plant nutrient requirements. *Khim. Sotsial. Zemled.* No. 3, 1935 (90-101). R.g.
- 631.427.3 Spithost, C.** Germination methods according to Neubauer. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (242-243). G.
- 631.427.3 Doby, G. v.** Experiments on physiological-chemical determination of plant-soluble soil nitrogen (nitrogen value). *Ztschr. Pflanz. Dung* 44, 1936 (265-282). G.
- 631.427.3 Golodkovsky, L. L.** Seedling method as a means of determining the requirement of soils for fertilizers. *Bull. Sred-nez. Nauch. Inst. Khlopokov.* 6, 1936. *Curr. Sci.* 5 (104).
- 631.427.3—Inniss, B. de L.; Hardy, F.** Investigations of the Mitscherlich method in Trinidad. *Trop. Agric. Trin.* 13, 1936 (292-298).
- 631.427.3 Kling, M.; Engels, O.** The determination of the nutrient content and fertilizer requirements of soils with special reference to different plant species and general growth factors. *Bodenk. PflErnahr.* 1, 1936 (331-339). G.
- 631.427.3 Mitscherlich, E. A.** Determination in the soil of potassium and phosphoric acids assimilable by plants. *Naturwissenschaften* 24, 1936 (582-584). C.A. 31 (198).
- 631.427.3 Mitscherlich, E. A.** Reply to H. Neubauer's paper "Is the Mitscherlich pot test suitable as a criterion for other methods of investigating soil?" *Ztschr. Pflanz. Dung* 44, 1936 (349). G.
- 631.427.3—Neubauer, H.** Is the Mitscherlich pot test suitable as a criterion of the utility of other methods of investigating soil? *Ztschr. Pflanz. Dung* 44, 1936 (327-341). G.
- 631.427.3 Neubauer, H.** The plant seedling method. *Ztschr. Pflanz. Dung* 43, 1936 (257-267). B.C.A. 55 (610). G.
- 631.427.3 Spithost, C.** The plant germination method, correlated to certain soils on the Wieringermeer polder. *Landbouwk. Tijdschr.* 48, 1936 (477-496). Du.g.
- 631.427.3 Kerr, H. W.; Barke, E. J.** Mitscherlich pot tests. *Cane Grow. Quart. Bull.* 4, 1937 (121-128).
- 631.427.3 Kertscher, F.** A simplified method of planting Neubauer dishes. *Bodenk. PflErnahr.* 3, 1937 (313-315). G.
- 631.427.3 Thomas, W.** Foliar diagnosis: principles and practice. *Plant Physiol.* 12, 1937 (571-599).
- 631.427.3 Thun, R.** The value of soil research, especially of the planned nutrient control by the plant seedling method. *Bodenk. PflErnahr.* 3, 1937 (1-55). G.

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.427.3 : 631.416.1** Doby, G. Determination of the available nitrogen in soils by physiological-chemical methods. *Math. Naturw. Anz. Ungar. Akad. Wiss.* 54, 1936 (831-858). C.A. 31 (5092).
- 631.427.3 : 631.416.1** Gussner, G.; Goeze, G. Some experiments and a proposal for determining available nitrogen in soil. *Ztschr. Pflanz. Dung* 42, 1936 (263-276).
- 631.427.3 : 631.421** Scheffer, F. Determination of the nutrient content of soils in field and Mitscherlich pot-culture experiments. *Kuhn-Arch.* 38, 1933 (141-163). B.C.A. 54 (422).
- 631.427.3 : 631.421** Da Costa, J. M. B. Field experiments concerning Mitscherlich's law. *Rev. Agron. Lisboa* 23, 1935 (65-74). Pt.
- 631.427.3 : 631.421** Neubauer, H. The position of soil research with regard to field experiments and that of the seedling plant method to other methods of soil investigation. *Soil Res.* 4, 1935 (234-250). G1.
- 631.427.3 : 631.421** Opitz, K.; Rath sack, K. The experiment of a nutrient control of fertile plain and sandy soil carried out by statistical fertilizer tests in the field with the help of the Mitscherlich and Neubauer methods. *Landw. Jahrb.* 81, 1935 (129-175). G.
- 631.427.3 : 631.421** Sundelin, G.; Franck, O.; Larson, C. Determination of plant assimilable nutrients in soils. I. Relation of Mitscherlich and Neubauer methods for potassium and phosphate to field manuring trials. *Medd. Cent. Inst. Försöksk. Jordbr.* No. 419, 1935, pp. 30. B.C.A. 54 (688). Sw.
- 631.427.3 : 631.421** Terlikowski, F.; Byczkowski, A. The possibility of utilizing Neubauer's method in the reduction of fertilization costs. *Rocz. Nauk Roln.* 38, 1937 (103-111). C.A. 31 (5089).
- 631.427.3 : 631.423.3** Mitscherlich, E. A., et al. Choice of uniform and appropriate methods for the determination of fertilizer requirements of soils. *Int. Kunstdünger-Konferenz* 1933, *Abt. II* (61-257). C.A. 28 (3164).
- 631.427.3 : 631.423.3** Keller, H. Critical notes on the technique of determining fertilizer requirements. *Ztschr. Pflanz. Dung* 36A, 1934 (320-335). G.
- 631.427.3 : 631.423.3** Armers, L. de. Investigations on soils. permanent manual investigations according to the Vageler-Alten method. *Kuhn-Arch.* 39, 1935 (184-243).
- 631.427.3 : 631.423.3** Engels, O. The determination of fertilizer requirements of the soil from soil tests. *Ztschr. Pflanz. Dung* 37, 1935 (84-92). G.
- 631.427.3 : 631.423.3** Jacks, G. V. The determination of the fertilizer requirements of the soil. *Ztschr. Pflanz. Dung* 38, 1935 (163-169). G.
- 631.427.3 : 631.423.3** Kühn, I. The determination of the easily assimilable potassium and phosphoric acid in soils. *Kisérlet. közlem.* 38, 1935 (189-204). C.A. 30 (3929).
- 631.427.3 : 631.423.3** Thornton, S. F. The available phosphorus and potassium contents of surface soils and subsoils as shown by the Neubauer method and by chemical tests. *J. Amer. Soc. Agron.* 27, 1935 (46-51).

## FERTILIZERS AND GENERAL AGRONOMY

**631.427.3:631.423.3 Thun, R.** Methods of determining nutrient values of soil and their value in practical agriculture. *Bird. Zbl. A.* 6, 1935 (161-176). C.A. 31 (7574). [G.]

**631.427.3:631.423.3 Burgevin, M.** The problem of the fertilizer requirement of soils at the international conference at Königsberg, July 1936. *Ann. Agron.* 6, no. 6, 1936 (811-817).

**631.427.3:631.423.3 Alten, F.; Loofmann, H.** The determination of available nutrients according to Neubauer compared with chemical tests according to the method of the agricultural research station of the Deutschen Kahsyndikat, Berlin-Lichterfelde. *Bodenk. Pflernähr.* 2, 1937 (198-211). [G.]

**631.427.3:631.423.3 Kohnke, H.** Testing the fertility of Alberta soils by the Neubauer and Lemmermann methods. *Sci. Agric.* 17, 1937 (312-317).

**631.427.3:631.423.3 Kühn, I.** Experiments relative to the determination of readily assimilable reserves of potash and phosphoric acid in the soil. *Superphosphate* 10, 1937 (101-113, 121-134). C.A. 31 (7164).

**631.427.3:631.423.3 Mitscherlich, E. A.** The "chemical analysis" of the soil. *Soil Sci.* 43, 1937 (253-255).

**631.427.3:631.423.3 Thornton, S. F.** "Root solubility" of the essential elements in the soil as an indication of availability. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (125-129).

**631.427.3:631.547.2 Ionescu Sisesti, G.; Valuta, I. G.** On certain particulars of Mitscherlich's law of vegetation factors. Experiments of 1932, 1933, 1934 and 1935. *An. Inst. Cerc. Agron. Român.* 8, 1936 (254-295). [F.]

**631.427.3:663.12 Luchetti, G.** The blastomycetic method of determining the availability of phosphate. *Ist. Agrar. Pisa Boll.* 11, 1935 (10-25). [I.]

**631.427.4 Kriuchkova, A. P.** The azotobacter method for determining the potash requirement of soils. *Trudy Nauch. Inst. Udob.* No. 108, 1933 (23-29). C.A. 29 (1556).

**631.427.4 Oksent'ian, V. G.** The microbiological method for determining the lime requirement of soils variously podzolized. *Trudy Nauch. Inst. Udob.* No. 108, 1933 (30-32). C.A. 29 (1556).

**631.427.4 Petersen, E. J.** Investigations on the Winogradsky and Sackett method of determining potash and phosphoric acid requirements. *Fidsskr. Planteavl.* 39, 1933 (781). Z.P.D. 37 (376). [Da.]

**631.427.4 Uspensky, E. E.; Kriuchkova, A. P.; Oksent'ian, V. G.** Microbiological methods of estimating the requirements of the soil for lime, phosphorus and potassium. *Trudy Nauch. Inst. Udob.* No. 108, 1933 (15-22). C.A. 29 (1556).

**631.427.4 Vilsmeier, G.; Poschenrieder, H.** Deterioration of potash and phosphoric acid requirement of soil. *Phosphorsäure* 3, 1933 (366). Z.A.C. 107 (438).

**631.427.4 Mehlich, A.; Fred, E. B.; Truog, E.** The Cunninghamella plaque method of measuring available phosphorus in soil. *Soil Sci.* 38, 1934 (444-458).

**631.427.4 Smith, F. B.; Brown, P. E.; Mensing, C. C.** Bacteriological method for measuring available phosphorus in soils. *Proc. Iowa Acad. Sci.* 41, 1934 (85-88). B.C.A. 55 (34).



# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.427.4 Söding, H. Investigation of the Mitscherlich-Baule effect factor with *Aspergillus niger*. *Deut. Forsch.* 23, 1934 (264) Z.P.D. 40 (381).
- 631.427.4 Young, A. W. Experiments with the Winogradsky spontaneous culture test on humid soils. *J. Tenn. Acad. Sci.* 9, 1934 (292-294); 10, 1935 (64-70). E.S.R. 74 (605).
- 631.427.4 Andrews, W. B. Carbon dioxide production by mannitol-treated soils as a means of determining crop response to fertilizers. *Soil Sci.* 39, 1935 (47-57). B.C.A. 54 (282).
- 631.427.4 Bobko, E. V.; Naldina, O. G.; Yashnova, N. V. Testing the distribution of fertilizers in soils by means of *Aspergillus niger* and *A. oryzae*. *Khim. Sotsial. Zemled.* No. 2, 1935 (35-41). [Rg.]
- 631.427.4 Butkevich, W. S. Evaluation of the phosphoric acid and potassium in the soil by means of mould culture. *Trans. Int. Soc. Soil Sci. Soc. Sect. A*, 1935 (123-127).
- 631.427.4 Mehlich, A.; Fred, E. B.; Truog, E. The Cunninghamella plaque method of measuring available phosphorus in soil. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (168-171).
- 631.427.4 Mehlich, A.; Fred, E. B.; Truog, E. Further work with the Cunninghamella plaque method of measuring available phosphorus in soils. *J. Amer. Soc. Agron.* 27, 1935 (826-832).
- 631.427.4 Oksent'ian, U. G. Microbiological methods for the determination of the fertilizer requirements of the soil applied to fractional field evaluation. *Mikrobiologia* 4, 1935 (611-624). [Rg.]
- 631.427.4 Sartory, A.; Sartory, R., et al. Preliminary study in synthetic media of the factors essential for the determination of plant nutrient requirements by means of *Sterigmatocystis nigra* Cramer. *C. R.* 200, 1935 (1692-1694). [F.]
- 631.427.4 Sekera, F. The carrying out and evaluation of the micro-fertilizer test. *Phosphorsäure* 5, 1935 (261-311). [G.]
- 631.427.4 Sekera, F. The quantitative micro-fertilizer test for testing the fertilizer effect of potash and phosphate. *Phosphorsäure* 5, 1935 (527-536). [G.]
- 631.427.4 Smith, A. M. Some observations on the *Aspergillus niger* method. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (171-173).
- 631.427.4 Stöckli, A. Azotobacter micro-experiments with fertilizers. *Landw. Jahrb. Schweiz* 1935 (693-725). [G.]
- 631.427.4 Kalninš, A. Microbiological analysis of soil. *Rept. Tenth Cong. Agron. Sci. Riga* 1936 (14-20). [L.]
- 631.427.4 Levantivska, B. M.; Lion, T. G. The biological determination of the  $P_2O_5$  and  $CaO$  requirements of the soil. *Trudi Inst. Agrokant. Khim.* 1, 1936 (82-106). [Urg.]
- 631.427.4 Levantivska, B. M.; Lion, T. G. The biological method of determining the dynamics and status of  $P_2O_5$  by means of *Aspergillus oryzae*. *Trudi Inst. Agrokant. Khim.* 1, 1936 (107-128). [Urg.]
- 631.427.4 Petrosian, A.; Kirakosian, A.; Mirsabekian, R., et al. Determination of the fertilizer requirements of the Oktembrian and Stalin districts (Armenia) by the microbiological method. *Mikrobiologia* 5, 1936 (657-668). [Rg.]
- 631.427.4 Smith, A. M. Further studies on the *Aspergillus niger* method of examining soils. *J. Soc. Chem. Indust.* 55, 1936 (2171-2211).

# FERTILIZERS AND GENERAL AGRONOMY

- 631.427.4 Steinberg, R. A.** Some effects of the heavy metals essential for the nutrition of *Aspergillus niger* upon its growth. *Amer. J. Bot.* 23, 1936 (227-231).
- 631.427.4 - Stöckli, A.** Micro-manuffal tests with Azotobacter. *Zbl. Bakt.* 11, 1936 (225-243). B.C.A. 56 (708).
- 631.427.4 Yeikina, O. G.** Azotobacter as an indicator of the available  $P_2O_5$  in Central Asia soils. *Bull. Sovet'NKhH.* 4, 1936 (64-77). R.e.
- 631.427.4 Andrews, W. B.** Carbon dioxide production in mannitol-treated soils as a measure of crop response to soil treatments. *J. Amer. Soc. Agron.* 29, 1937 (253-268).
- 631.427.4 - Kriuchkova, A. P.** Microbiological evaluation of fertilizers. *Mikrobiologia* 6, 1937 (308-320). R.e.
- 631.427.4 - Matuki, G.** The *Aspergillus niger* method of determining the amount of phosphorus and potassium in the soil, available to plant growth. *J. Sci. Soil Japan* 11, 1937 (240-246). J.e.
- 631.427.4 Mautner, I.** Relation between the size of the *Aspergillus* yield and the nutrient content of soil. *Mezőg. Kutat.* 10, 1937 (101-106). H.g.
- 631.427.4 Niklas, H.; Miller, M.** Mathematical representation of sorption ratios in microbiological manural experiments. *Bodenk. Pflernähr.* 4, 1937 (173-176). B.C.A. 56 (1099).
- 631.427.4 Wilson, J. K.** The production of macroscopic colonies on plaques of soil. *J. Amer. Soc. Agron.* 29, 1937 (286-292).
- 631.427.4; 631.411.2 Greene, R. A.** Some factors limiting the applicability of biological methods for determining the availability of plant food elements in calcareous soils. *Soil Sci.* 36, 1933 (261-266). C.A. 28 (243).
- 631.427.4; 631.411.2 Reuszer, H. W.** Results from *Cunninghamella* plaque tests for available phosphorus in calcareous soils. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (197-204).
- 631.427.4; 631.416.1 Levantivska, B. M.** Biological method for determining the mineral nitrogen requirements of plants. *Trudi Inst. Agrokult. Khim.* 1, 1936 (129-137). U.r.g.
- 631.427.4; 631.416.2 Luchetti, G.** Bacterio-chemical determination of assimilability of phosphoric anhydride in soils. *Atti Accad. Lincei* 6, 1935 (5-72). B.C.A. 54 (740). I.
- 631.427.4; 631.416.2 Smith, F. B.; Brown, F. E.; Millar, H. C.** The assimilation of phosphorus by *Aspergillus niger* and *Cunninghamella* sp. *J. Amer. Soc. Agron.* 27, 1935 (988-1000).
- 631.427.4; 631.416.2 Elkina, O. G.** Azotobacter as an indicator of available phosphoric acid in the soils of Central Asia. *Bull. Sovet'NKhH.* No. 4, 1936 (64-77). C.A. 31 (5924). R.e.
- 631.427.4; 631.416.4 Haigh, L. D.** Use of *Aspergillus niger* in testing potash availability. *J. Assoc. Off. Agric. Chem.* 18, 1935, (293-297). E.S.R. 75 (301).
- 631.427.4; 631.416.846 Niklas, H.; Poschenrieder, H.** The determination of magnesium requirement and magnesia-fertilizer effect in soil by means of *Aspergillus niger*. *Bodenk. Pflernähr.* 1, 1936 (235-247). G.
- 631.427.4; 631.423.3 Allen, O. N.; Magistad, O. C.** A comparison of the *Aspergillus niger* and replaceable potash methods for the estimation of available potash. *Proc. Hawaii. Acad. Sci. Bishop Mus. Spec. Pub.* 26, 1935, pp. 1.

## BIBLIOGRAPHY OF SOIL SCIENCE

### 631.43 PHYSICAL PROPERTIES OF SOILS

- 631.43 - Galletti, A. C.** First contribution to the study of soil physics with particular reference to Emilian soils. *Ann. Sta. Sper. Agrar. Modena* 3, 1934 (357-389). [L.]
- 631.43 - Hooghoudt, S. B.** Investigations on some physical magnitudes of soil. *Trans. Int. Soc. Soil Sci. Comm. I, Versailles, 1934* (213-242). [F.]
- 631.43 - Hooghoudt, S. B.** Physical measurements in soils. *Versl. Landbouwk. Onderz.* No. 40B, 1934 (215-245). B.C.A. 54 (243).
- 631.43 - Keen, B. A.** Physical measurements of soil in relation to soil type and fertility. *Emp. Cott. Grow. Corp. 2nd Conf. Rept.* 1934 (311-315).
- 631.43 - Ballu, T.** Soil physics. *Mach. Agric. Equip. Rural* No. 6, 1935. *Ann. Agron.* 5 (752).
- 631.43 - Pigulevsky, M. Kh.** Principles and methods for the study of the physico-mechanical properties of soils. *Trudy LOMU* 11 No. 44, 1936, pp. 146. [R.]
- 631.43 - Süchting, H.; John, G.** On the determination of the physical composition of the soil and certain characters dependent thereon. *Mitt. Forstl. Forstwiss.* 7, No. 4, 1936 (429-450). C.M.R. No. 14 (5).
- 631.43 - Hooghoudt, S. B.** Some natural magnitudes of the soil. 5. The actual particle size, the specific number and the mean particle size. *Versl. Bodenk. Inst. Groningen* 43 (1)B, 1937 (1-10). [D.]
- 631.43 - Rowles, W.; Fletcher, H. L.** Some physical properties of virgin mineral soils of Quebec. *Sci. Agric.* 17, 1937 (333).
- 631.43 : 535.21 - Goll, G.** The absorption of sunlight by soil. *Mezg. Kutar* 9, 1936 (265-270). [H.]
- 631.43 : 535.21 - Ramdas, L. A.; Dravid, R. K.** Soil temperatures in relation to other factors controlling the disposal of solar radiation at the earth's surface. *Proc. Nat. Inst. Sci. India* 2, 1936 (131-143).
- 631.43 : 539.211 - Zunker, F.** The development of the soil surface, gravitation and surface forces. *Bulet. No. 24, 1935* (1-9). P.I.S. 10 (165).
- 631.43 : 539.214 - Budanov, M. F.** The determination of plasticity according to Atterberg. *Izv. Severokavkaz. Inst. Hydrotekh.* 1 2, 1934 (54-58). *Pedology* 1936 (890).
- 631.43 : 539.214 - Volkov, M. I.; Surozh, S. I.** Determination of subsoil plasticity. *Pedology* No. 2, 1935 (230-238). [R.]
- 631.43 : 539.214 - Minetsky, K. Z.** A volumetric modification of Atterberg's method for the determination of soil plasticity. *Trudy Inst. Agrog. Khim.* 1, 1936 (60-73). [U.]
- 631.43 : 539.214 - Minetsky, K. Z.** Volumetric modification of Atterberg's method for the determination of soil plasticity. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (431-438). [R.]
- 631.43 : 539.214 - Pankov, A. M.** Drop fall or sliding water. *Pedology* No. 1, 1936 (54-61). [R.]
- 631.43 : 539.41 - Berthelot, A.; Faillietaz, R.; Amoureux, G.** The influence of compression of soil on its physical properties. *Couv. I.M.C.* 1932, 1933 (137-140). *Bied. Zbl.* 5 (418). [F.]

# FERTILIZERS AND GENERAL AGRONOMY

**631.43:539.41**—Taimud, D. L. "Molecular soldering" and its application. Preliminary communication. *Kollod-Ztschr.* 64, 1933 (227-229). C.A. 27 (5443).

**631.43:539.41**—Vassilenko, P.; Setsinsky, A. Resistance of soils to compression as one of the factors determining the work of agricultural implements. *Pedology* No. 6, 1933 (443-461). [R.]

**631.43:539.41**—Anakhov, N. P. New method for determining soil friction. *Hydrotekh. Stroil.* No. 7, 1934 (44). P.J.S. 12 (64).

**631.43:539.41**—Hogentogler, G. A. Compressibility and elasticity of soils indicated by flocculation constants. *Public Works* 65, No. 9, 1934 (16-18). E.S.R. 72 (847).

**631.43:539.41**—Joffe, A. Y.; Pokrovsky, G. I. Methods for the laboratory determination of the angle of slope of soils by means of a centrifuge. *Zh. Tekh. Fiz.* 4, 1934 (602-616). C.A. 29 (865).

**631.43:539.41**—Jürgenson. Shearing resistance of soils. *J. Boston Soc. Civil Engrs.* 21, 1934 (242).

**631.43:539.41**—Weber, H. Increasing the strength and density of soil by chemical means. *Siemens Ztschr.* 14, 1934 (383-388). C.A. 29 (868).

**631.43:539.41**—Anakhov, N. P.; Pokrovsky, G. I. A new apparatus for determining the angle of internal friction and cohesion in soils. *Zh. Tekh. Fiz.* 5, 1935 (725-729). C.A. 31 (197).

**631.43:539.41**—Anakhov, N. P.; Pokrovsky, G. I. Determination of the angle of internal friction of a bound soil by means of a centrifuge. *Zh. Tekh. Fiz.* 5, 1935 (796-804). C.A. 31 (198).

**631.43:539.41**—Ballu, T. Resistance of soil to the passage of cultivation implements. *J. Agric. Prat.* 64, 1935 (447-448).

**631.43:539.41**—Filatov, M. M. Deformations in the micro-structure of soils caused by compression. *Trans. Int. Soc. Soil Sci. Soviet Sect. A*, 1935 (20-35).

**631.43:539.41**—Komaroff, N. Specific resistance to pressure of soil. *Landw. Masch.* 2, 1935 (3). Z.P.D. 41 (236). [R.]

**631.43:539.41**—Konstantinova, V. P. On the adhesion of two solid phases. *Trudy Sekt. Fiz. Pochv. Fiz.-Agron. Inst.* No. 1, 1935 (7-16). [R.]

**631.43:539.41**—Okhotin, V. V.; Bogdanov, G. F. Compaction and coherence of subsoils. *Physico-Mechanical Properties of Subsoils, Cent. Inst. Roads and Machines, Leningrad*, 1935 (24-47). [R.]

**631.43:539.41**—Okhotin, V. V.; Bogdanov, G. F. Friction and cohesion in subsoils. *Physico-Mechanical Properties of Subsoils, Cent. Inst. Roads and Machines, Leningrad*, 1935 (48-63). [R.]

**631.43:539.41**—Pokrovsky, G. I. The theory of the work of the plough. *Pedology* No. 5-6, 1935 (863-866).

**631.43:539.41**—Ballu, T. New instrument for studying soil tenacity. *Bull. Assoc. Franç. Ét. Sol* 2, 1936 (43-46). [F.]

**631.43:539.41**—Hénin, S. Some results obtained in soil investigations by means of the Demolon-Hénin dynamometer borer. *Soil Res.* 5, 1936 (1-20). [F.]

**631.43:539.41**—Pigulevsky, M. K. Methods and means of studying the physico-mechanical properties of the soil for the purpose of correctively and constructively formulating and rationally exploiting the mechanical means of soil cultivation. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (209-233). [R.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.43 : 539.41** —Pigulevsky, M. K. Shearing strength of soils. *Pedology* No. 1, 1936 (24-38). [R.e.]
- 631.43 : 539.41** —Pigulevsky, M. K. Shearing strength of soils. *Pedology* No. 6, 1936 (829-840). [R.e.]
- 631.43 : 539.41** —Rosen, M. F. Apparatus for field determinations of the adhesiveness of subsoils. *Pedology* No. 2, 1936 (296-298). [R.]
- 631.43 : 539.41** —Schmitz, F. D. Instruments for measuring soil tenacity. *Mach. Agric. Equip. Rur.* 2, 1936 (127-130). P.I.S. 12 (64).
- 631.43 : 539.41** —Vasilenko, P. Resistance of soils to movement as a factor of performance of agricultural machines. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (247-262). [R.]
- 631.43 : 539.41** —Yakovleva, M. N. Calculation of soil resistance during ploughing based on laboratory investigations. *Pedology* No. 6, 1936 (840-858). [R.]
- 631.43 : 539.41** —Ballu, T. Contribution to the study of the compressibility of soils. *Mach. Agric. Equip. Rur.* 3, 1937 (6-8). [F.]
- 631.43 : 539.41** —Burmister, D. M. Squeeze test for integrity of soil samples. *Engng. News-Rec.* 118, 1937 (588-589). C.A. 31 (4032).
- 631.43 : 539.41** —Kneas, F. N. Bearing values of soils. *J. Franklin Inst.* 223, 1937 (443-462).
- 631.43 : 539.41** —Meara, F. L. Physical behaviour of soils under loading. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (361-366).
- 631.43 : 539.41 : 631.432.2** —Cooling, L. F. The physical properties of clay soils and some aspects of their mechanical behaviour. *J. Soc. Chem. Indust.* 55, 1936 (25-31).
- 631.43 : 539.41 : 631.557** —Davies, C.; Smyth-Homewood, G. B. Consolidation of some loam soils and the effects upon the growth and yield of cereals. *J. S.-E. Agric. Coll. Wye* No. 38, 1936 (24-26, 141-142).
- 631.43 : 551.58** —Aarnio, B. The influence of climatic factors on the soil's cultural properties. *Nord. JordbrForh.* 5 7, 1935 (423-428).
- 631.43 : 551.58** —Gestlin, H. Some correlations between climatology and soil physics. *Bull. Assoc. Franç. Ét. Sol* 1, 1935 (52-54). [F.]
- 631.43 : 581.144.2** —Rogers, W. S. Soil factors in relation to root growth. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (249-253).
- 631.43 : 631.413.41** —Lutz, J. F. The relation of the calcium and hydrogen ions to some physico-chemical properties of clays. *Amer. Soil Surv. Bull.* 17, 1936 (24-27).
- 631.43 : 631.413.41** —Pankov, A. M. The influence of adsorbed bases on the physical and mechanical properties of soils. 1. Influence of adsorbed bases on settling, and its expression. *Pedology* No. 5, 1936 (665-673). [R.]
- 631.43 : 631.51** —Siebecke, F. Physical investigations of the influence of tillage and fertilising on the condition of Dahlem soils. *Landw. Jahrb.* 80, 1934 (611-667). [G.]
- 631.43 : 631.51** —Hénin, S. Mechanical properties and the working of soil. *Bull. Assoc. Franç. Ét. Sol* 1, 1935 (46-51). [F.]

# FERTILIZERS AND GENERAL AGRONOMY

**631.43 : 631.517** Pigulevsky, M. Physical and mechanical properties of the soil affecting the design of cultivation machinery. *Trans. Int. Soc. Soil Sci. Soviet Sect. 1st Comm. A2*, 1934 (21-43). [F.]

**631.43 : 631.517** Vilensky, D.; Vassilenko, P. Soil physics problems of the mechanisation of agriculture in the U.S.S.R. *Trans. Int. Soc. Soil Sci. Soviet Sect. 1st Comm. A2*, 1934 (9-20). [F.]

**631.43 : 631.544.7** Bykov, N. I.; Redkin, N. E. The effect of mulching on certain physico-chemical properties of the soil. *Vitno Storn. Rab. Sekh. Agratekh.* No. 120, 1935 (35-50). [R.e.]

**631.43 : 631.58** Stauffer, R. S. Influence of soil management on some physical properties of a soil. *J. Amer. Soc. Agron.* 28, 1936 (900-906).

**631.43 : 631.62** Burger, H. Drainage and afforestation in the Eysch region of Vorarlpen. *Proc. Int. Soc. Soil Sci.* 12, 1937 (7-8). [G.]

**631.43 : 631.62** Gardner, W. The influence of soil characteristics on drainage and irrigation practices. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (383-392).

**631.43 : 631.81** Akhromeiko, A. I. The effect of lime, farmyard manure, and the root system of plants on the physico-chemical properties of soil. *Trans. Int. Soc. Soil Sci. Soviet Sect. Comm. 4*, 1933 (246-249).

**631.43 : 631.81** Burgevin, H. Action of fertilizers on the physical properties of loam. *Trans. Int. Soc. Soil Sci. Comm. 1, Versailles*, 1934 (243-246). [F.]

**631.43 : 631.81** Galletti, A. C.; Pantoli, B. The action of chemical manures on the physical properties of the soil. *Ann. Sta. Sper. Agrar. Modena* 3 (n.s.) 1932-34. P.I.S. 10 (11). [I.]

**631.43 : 631.878** Zagorskaya, A. The effect of the application of peat on the physico-chemical properties of sandy soils. *Trudy Turf. Inst.* 9, 1934 (53-59). *Pedology* 1935 (910). [R.]

**631.43 : 633** Weisbrod, W. The influence of different crops on the physical properties of soil, examined in the natural state. *Kühn-Arch.* 37, 1934 (173-229). *Bied. Zbl.* 6(101). [G.]

**631.43/083.72** Blair, G. W. Scott. Definition and translation of rheological terms used in soil physics. *Trans. Int. Soc. Soil Sci. Comm. 1, Versailles*, 1934 (159-167).

**631.431** Brankstone, H. R.; Gealy, W. B.; Smith, W. O. Improved technique for determination of densities and porosities. *Bull. Amer. Assoc. Petroleum Geol.* 16, 1932 (915-923).

**631.431** Løddesøl, A. Sampling and volume weight determination of peat soils. *Medd. Norske Myrselsk.* 32, 1934 (101). Z.P.D. 44 (180).

**631.431** Pokrovsky, G. I.; Sinelschikov, S. I. Photomicrographic researches of soils. *Trans. Int. Soc. Soil Sci. Soviet Sect. 1st Comm. A2*, 1934 (178-182). [F.]

**631.431** Sinelschikov, S. I. Micrographic investigations of the soil. *Pedology* No. 3, 1934 (373-376). [R.g.]

**631.431** Pichot, M. Imbibition and swelling of soil clay and their relation to the rate of flow of solids in rivers. *C.R.* 200, 1935 (1060-1063). [F.]

**631.431** Sharov, V. S. Method of determining the swelling capacity of clays and soils. *Pedology* No. 2, 1936 (299-301). [R.e.]

## BIBLIOGRAPHY OF SOIL SCIENCE

**631.431—Sideri, D. I.** A comparative study of methods for determining the volume weight of soils and their use in studying the performance of agricultural machines and implements. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (266-273). [R.]

**631.431: 631.413.4—Sideri, D. I.** Soil swelling. II. Swelling of soil in solutions of electrolytes; microscopic and X-ray investigations. *Soil Sci.* 41, 1936 (275-288).

**631.431: 631.432.21—Hrubes, P.** Volume changes of soil pastes after drying. *Sborn. Čsl. Akad. Zensk.* 11, 1936 (196-200). [Cz.g.]

**631.431: 631.432.21—Woodruff, C. M.** Linear changes in the Shelby loam profile as a function of soil moisture. *Proc. Soil. Sci. Soc. Amer.* 1, 1937 (65-70).

**631.431: 631.434—Russell, E. W.** Interaction of clay with water and organic liquids as measured by specific volume changes and its relation to the phenomenon of crumb formation in soils. *Phil. Trans. A*, 1934 (361-389). B.C.A. 54 (36).

**631.431: 631.434—Sideri, D. I.** Soil swelling: I. The swelling of the soil in water considered in connection with the problem of soil structure. *Soil Sci.* 41, 1936 (135-151).

**631.431.005—Adrianov, P. I.** Dilatograph with photo-recorder. *Kolloid-Ztschr.* 77, 1936 (38-44). B.C.A. 56 (70).

### 631.432 GROUND WATER. SOIL MOISTURE

**631.432—Larsen, J. H. Thal.** Fluctuations in the level of the phreatic surface with an atmospheric deposit in the form of dew. *Soil Res.* 4, 1935 (223-233).

**631.432—Koehe, W.** Review of ground water science. *Kulturtech.* 39, 1936 (1-40). [G.]

**631.432: 551.577—Larsen, J. H. Thal.** On the influence of rain-water on the ground-water level. *Meded. Landbouwsch. Wageningen* 34, 1930, pp. 19. Du E.

**631.432: 553.72—Schofield, C. S.; Moon, C. L.; Knight, E. W.** Subsoil waters of Newlands (Nev.) field station. *U.S.D.A. Tech. Bull.* 533, 1936, pp. 30. C.A. 31 (1541).

**631.432: 581.5—Myers, H. E.** The differential influence of certain vegetative covers on deep sub-soil moisture. *J. Amer. Soc. Agron.* 28, 1936 (106-114).

**631.432: 631.414.1—Vedernikov, V. V.** Influence of soil capillarity on seepage with a free surface. *C.R. Acad. Sci. (U.S.S.R.)* 3 (n.s.), 1936 (156-160). [G.]

**631.432: 631.436—Fellberg, A.** The effect of height of ground water level on the temperature of the upper soil layers. *Proc. Int. Soc. Soil Sci.* 12, 1937 (9-10). [G.]

**631.432: 631.44—Vyssotsky, G. N.** Sub-soil science. *Pedology* No. 6, 1934 (834-840). [R.g.]

**631.432: 631.557—Roe, H. B.** A study of influence of depth of ground-water level on yields of crops grown on peat lands. *Minn. Agric. Expt. Sta. Bull.* 330, 1937, pp. 32.

**631.432: 631.62—Gardner, W.; Collier, T. R.; Farr, D.** Ground water: Pt. I. Fundamental principles governing its physical control. *Utah Agric. Expt. Sta. Bull.* 252, 1934, pp. 40. P.I.S. 10 (195).

## FERTILIZERS AND GENERAL AGROXOMY

**631.432 : 631.62—Millinchamp, R.** A study of the behaviour of the water table in underdrained and surface drained river valley soils in Quebec. (A progress report). *Sci. Agric.* 15, 1935 (625-632).

**631.432 : 631.81—Sobolev, S. S.** Application of hydrogeology to the problem of fertilizer treatment of southern sands. *Priroda* No. 5, 1935 (40-41). *Pedology* 1935 (917). [R.]

**631.432.2—Bodman, G. B. ; Edlefsen, N. E.** The soil moisture system. *Soil Sci.* 38, 1934 (425-444).

**631.432.2—Chaptal, L.** The secondary sources of soil moisture. *Trans. Int. Soc. Soil Sci. Comm. I, Versailles*, 1934 (197-212). [F.e.]

**631.432.2—Hooghoudt, S. B.** Researches on some physical magnitudes in soil. *Versl. Bodenk. Inst. Groningen* No. 40B, 1934 (215). P.I.S. 9 (154).

**631.432.2—Sitz, M.** The regulation of moisture in the soil by simple means. *Hassadeh* 15, No. 4, 1935 (253-255). [Hb.]

**631.432.2—Alexander, L. T. ; Haring, M. M.** Vapor pressure-water content relations for certain typical soil colloids. *J. Phys. Chem.* 40, 1936 (195-205). C.A. 30 (4258).

**631.432.2—Arena, A.** Soil water available for plants. Investigation of Argentine soils by the method of Vageler and Alten. *Agronomia, B. Aires* 29, No. 154, 1936, pp. 73. P.I.S. 11 (155-156).

**631.432.2—Kotukov, A.** Dissolving capacity of bound water in soil. *Kolloid. Zh.* 2, 1936 (297-303). C.A. 30 (6487).

**631.432.2—Kuron, H.** The delimitation of forms of bound water in soil by their influence on the exchange between soil and salts. *Ztschr. Pflanz. Düng.* 45, 1936 (352-363). [G.]

**631.432.2—Diserens, E.** Relations between soil and water. *Trans. 6th Comm. Int. Soc. Soil Sci. Zürich*, 1937 (10-12). [F.]

**631.432.2—Donat, J.** The daily fluctuations in pressure in soil water. *Proc. Int. Soc. Soil Sci.* 12, 1937 (12). [G.]

**631.432.2—Freckmann, W. ; Baumann, H.** The basic principles of the moisture content in soil and its investigation. *Bodenk. Pflernähr.* 2, 1937 (127-166). [G.]

**631.432.2—Olmstead, L. B.** Some moisture relations of the soils from the erosion experiment stations. *U.S.D.A. Tech. Bull.* 562, 1937, pp. 44. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (61-64).

**631.432.2 : 525.5—Ramdas, I. A. ; Katti, M. S.** The diurnal variation of moisture in the soil during the clear season. *Curr. Sci.* 3, 1935 (612).

**631.432.2 : 539.41—Ryzhov, S. N. ; Selitrennikova, L. B.** The cementing action of water films in soil. *Bull. SoiusNIKHI.* No. 7, 1935 (73-83). [R.e.]

**631.432.2 : 539.41—Proctor, R. R.** Soil compaction control for rolled earth dam construction. *J. Amer. Water Works Assoc.* 28, 1936 (134-141). E.S.R. 75 (261).

**631.432.2 : 539.41—Wheeting, L. C.** Static friction measurements in the study of soil moisture relationships. *Soil Sci.* 41, 1936 (1-11).

**631.432.2 : 541.144.7—Zaitseva, A. A.** Effects of soil drought on photosynthesis and respiration in plants. *Bull. Acad. Sci. (U.S.S.R.) (Cl. Sci. Math.) Biol. Ser.*, 1935 (19-39). [R.e.]

**631.432.2 : 541.144.7—Zaitseva, A. A.** The effect of soil drought on photosynthesis. *Bull. Acad. Sci. (U.S.S.R.) (Cl. Sci. Math.) Biol. Ser.* No. 1, 1936 (23-36). [R.e.]



# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.432.2:551.5 Ramdas, L. A. ; Katti, M. S. Agricultural meteorology : Preliminary studies on soil moisture in relation to moisture in the surface layers of the atmosphere during the clear season at Poona. *Indian J. Agric. Sci.* 4, 1934 (923-937).
- 631.432.2:551.57 Aragou, M. Dehydration of air in the soil. *Mo. Bull. Agric. Sci. Pract.* 26, 1935 (1691-1751).
- 631.432.2:551.57 Smolik, L. Relative humidity of the air near the soil surface. *Sborn. Csl. Akad. Zemld.* 10, 1935 (98-102). (Cze.)
- 631.432.2:551.57 Mellanby, K. To measure the humidity of the soil atmosphere. *Bull. Ent. Res.* 27, 1936 (287).
- 631.432.2:551.57 Ramdas, L. A. ; Katti, M. S. Agricultural meteorology : studies on soil-moisture in relation to moisture in the surface layers of the atmosphere during the clear season at Poona. *Indian J. Agric. Sci.* 6, 1936 (1163-1200).
- 631.432.2:551.58 Geslin, H. ; Servy, J. Rainfall, soil moisture and climate from the agronomic point of view. *Ann. Agron.* 7 (n.s.), 1937, 85-101. (F.)
- 631.432.2:581.032.3 Bouyoucos, G. J. The dilatometer method as an indirect means of determining the permanent wilting point of soils. *Soil Sci.* 42, 1936, 217-222.
- 631.432.2:581.032.3 Bouyoucos, G. J. A rapid indirect method for determining the wilting coefficient of soils. *J. Amer. Soc. Agron.* 28, 1936, 581-585.
- 631.432.2:581.032.3 Da Costa, J. M. B. The study of soil moisture relationships by the freezing point method. With special reference to the wilting coefficient of the soil. *Thesis, London* (Oct. 1936) pp. 134. mimeo.
- 631.432.2:581.032.3 Simonis, W. Dependence of the osmotic value of plants of different ecological groups on the soil water content. *Plant. Res. Ber.* 83, 1936, 191-249. (RCA 56-597) (G.)
- 631.432.2:581.032.3 Livingston, B. E. ; Noren, W. L. Water-supplying power and water-absorbing power of soils, as related to wilting of wheat and clovers in greenhouse pot cultures. *Soil Sci.* 43, 1937 (177-204).
- 631.432.2:581.116 Bosman, F. H. Water in relation to plant growth. *Farms. Sci. Agric.* 11, 1936 (233-235).
- 631.432.2:581.116 Singh, B. N. ; Singh, B. R. Growth and water requirement of crop plants in relation to soil moisture. *Proc. Indian Acad. Sci.* 4B, 1936 (376-402). (RCA 56-272)
- 631.432.2:581.144.2 Kachinsky, N. A. ; Ossin, D. D. The root system of wild and cultivated plants in different soil types in connection with moisture and the nutrient relationships of soils. *Trans. Int. Soc. Soil Sci. Soviet Sect.* 1, 1935 (5-19). (G.)
- 631.432.2:581.144.2 Sperry, T. M. Root systems in Illinois prairie. *Ecology* 16, 1935 (178-200).
- 631.432.2:581.144.2 Loomis, W. E. ; Ewan, L. N. Hydro-tropic responses of roots in soils. *Bot. Gaz.* 97, 1936 (728-743).
- 631.432.2:581.144.2 Nedrow, W. W. Studies on the ecology of roots. *Ecology* 18, 1937 (27-52).
- 631.432.2:581.5 Free, G. R. A comparison of soil moisture under continuous corn and bluegrass soil. *J. Amer. Soc. Agron.* 28, 1936 (359-363).

## FERTILIZERS AND GENERAL AGRONOMY

**631.432.2 : 581.5—Menchikovskiy, F.** Seasonal changes of the moisture content of solgah soil of Palestine and their influence on vegetation. *Soil Sci.* 42, 1936 (167-174).

**631.432.2 : 631.411.1 Taylor, E. M.; Uppal, H. L.** The flow of water in sand. *Engineer*, Aug. 4, 1933 (107). *Abstr. Curr. Lit. Agric. Engng.* No. 9, 1933 (3).

**631.432.2 : 631.414.1 Shreve, F.; Turnage, W. V.** The establishment of moisture equilibrium in soil. *Soil Sci.* 41, 1936 (351-355).

**631.432.2 : 631.43—Katti, M. S.** Moisture variation indices of soils in relation to their other physical properties. *Curr. Sci.* 4, 1935 (419).

**631.432.2 : 631.51 Gursky, A. V.** Ecological features of the loess semi-deserts of Western Kopet-Dag. *Soviet. Subtrop.* No. 3, 1934 (50-67). *Pedology* 1936 (660).

**631.432.2 : 631.51 Aragou, J.** Dehydration of air in the soil. *Mach. Agric. Equip. Rev.* 3, 1937 (110, 131-132). [F.]

**631.432.2 : 631.51 Elezari-Volcani, M.** Tillage experiments at the Experiment Station at Gevathi. *Yedoth* 3, 1937 (121-122). [F.]

**631.432.2 : 631.51 Esselen, D. J.** Does cultivation conserve soil moisture? *Farm. Sci. Abstr.* 12, 1937 (6-12).

**631.432.2 : 631.531.2 Afanas'ev, Ya. N.** Super-early sowing in 1933 in the White Russian S.S.R. in its relation to soil conditions and agrotechnics. *Pedology* No. 5-6, 1935 (763-781). [R.]

**631.432.2 : 631.547.2 Litvinov, L. S.** The criterion of estimation of soil moisture. *Bot. Zh.* 17, 1932 (451-473). *Biol. Abs.* 11 (711).

**631.432.2 : 631.547.2 Rogers, W. S.** The relation of soil moisture to plant growth, illustrated by moisture meter experiments with strawberries. *E. Malling Res. Sta. Ann. Rpt.* 1936 (111-120).

**631.432.2 : 631.613 Drake, R. R.** Soil moisture conservation. *Agric. Engng.* 18, 1937 (15-16).

**631.432.2 : 631.62 Solnar, O.** Drainage effect in dry periods. *Proc. Int. Soc. Soil Sci.* 12, 1937 (19-20). [G.]

**631.432.2 : 631.67 Hendrickson, A. H.; Veihmeyer, F. J.** The maintenance of predetermined soil-moisture conditions in irrigation experiments. *Proc. Amer. Soc. Hort. Sci.* 30, 1933 (421-425). [E.S.R. 72 (340)]

**631.432.2 : 631.81 Burgevin, H.** Action of fertilizers on the properties of loams. *C. R. Acad. Agric.* 21, 1935 (702-709). [F.]

**631.432.2 : 631.81 Foster, A. G.; Tatman, E. C.** The influence of soil moisture and fertilizers on the specific electrical conductivity of tomato plant sap. *Amer. J. Bot.* 24, 1937 (35-39).

**631.432.2 : 631.81 Miège, E.** Water and fertilizer elements balance in certain typical Moroccan soils. *Ann. Agron.* 7, 1937 (370-388). [F.]

**631.432.2 : 631.811.91 Hénin, S.** Soil water in its relations with the plant. *Ann. Agron.* 6 (n.s.), 1936 (723-741). [F.]

**631.432.2 : 631.811.91 Huberty, M. R.** Effect of soil characteristics on plant development in relation to water conservation. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (439-446).

**631.432.21—Pantanelli, E.** Rate of evaporation from the soil. *Mel. Prod. Montecassino* 14, 1933, pp. 7. [E.S.R. 72 (12)]

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.432.21—Valdhanathan, V. I.; Luthra, H. R.** Study of the evaporation of water from a soil surface with reference to the fluctuations of water-table. *Punjab Irrig. Res. Inst. Res. Pub.* 5, No. 3, 1934, pp. 8.
- 631.432.21—Mayer, R.** A study of climatic factors and their relation to agricultural hydraulics. *An. Inst. Sup. Agron. Lisboa* 7, 1935 (62-102). Pt.
- 631.432.21—Geslin, H.** Evaporating power of the air and soil humidity. *C.R.* 203, 1936 (1095-1097). F.
- 631.432.21—Ursulov, A. N.** Nature of the drying up of the soil profile. *Pedology* No. 1, 1936 (119-124). R e.
- 631.432.21—Meyer, H. F.** Evaporation from the soil in relation to particular districts. (Contd.) *Tharandt Jahrb.* 88, No. 8, 1937 (549-573). C.M.R. 5 (12).
- 631.432.21:539.211—Kus'michev, I. P.** Changes in the total soil surface during dehydration from different initial moistures. *Trans. Soviet Sci. Int. Soc. Soil Sci.* Vol. 5, 1936 (333-346). R e.
- 631.432.21:581.5—Friedrich, W.** Measurement of the evaporation from soil. *Kulturtech.* 38, 1935 (234-251). G.
- 631.432.21:581.5—Stallert, M. G.** The influence of the vegetation upon evaporation from the surface of the soil. *Scotska SkogsFören. Tidskr.* 35, No. 2, 1937 (161-195). C.M.R. 18 (8). G.
- 631.432.21.005—Rode, A.** Apparatus for determining the evaporation of ground water and the amount of precipitation which reaches ground water level. *Pedology* No. 2, 1935 (174-184). R e.
- 631.432.3—Sigrist, R.** Physical analysis of soil in practice. *Kulturtech.* 36, 1933 (137-147). *Bot. Zbl.* 5 (553). G.
- 631.432.3—Zunker, F.** Soil permeability. *Kulturtech.* 36, H.1, 1933. P.L.S. 8 (75).
- 631.432.3—Astapov, S. V.** The determination by laboratory methods of the hydraulic properties of soil areas for reclamation purposes. *Trans. Int. Soc. Soil Sci. Soviet Sci. Int. Comm.* A2, 1934 (133-146). F.
- 631.432.3—Diénert, F.** The infiltration and evaporation of water in soil. *Ann. Hig. Publ. Paris* 12, 1934 (554). C.A. 30 (3926).
- 631.432.3—Diserens, E.** The determination of the permeability of soil in its natural condition. *Schweiz. Landw. Monatsh.* 78, 1934, pp. 18. G.
- 631.432.3—Zakharov, S. A.** Field study of soil permeability with artificial wetting. *Trans. Int. Soc. Soil Sci. Soviet Sci. Int. Comm.* A2, 1934 (120-132). F.
- 631.432.3—Egorov, S. A.; Lazarev, N. V.** An movement in foundation soils with a fine grain. *Hydrotekh. Stroitel'stvo* No. 11, 1935 (21-23). *Pedology* 1937 (274).
- 631.432.3—Hooghoudt, S. B.** Experiments on the determination of the permeability of soil by means of pump tests. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (382-385). G.
- 631.432.3—Kvasnikov, V. V.** The constant of the soil maximum microcellular volume. *Zap. Voronezh. S.-Kh. Inst.* 1, 1935 (110-130). *Pedology* 1937 (272).
- 631.432.3—Mischenko, N. F.** Methods of fixation and porosity determination in the study of soil mechanics. *Agric. Engng.* 16, 1935 (23-29).

## FERTILIZERS AND GENERAL AGRONOMY

- 631.432.3**—**Morosov, A. T.** The movement of water in soil. *Pedology* No. 3, 1935 (339-356). [R.g.]
- 631.432.3**—**Torstensson, G.; Eriksson, S.** A new method for determining the porosity of the soil. *LantbrHögsk. Ann.* 2, 1935 (159-179). [G.sw.]
- 631.432.3**—**Bodman, G. B.** Factors affecting downward movement of water in soils. *Amer. Soil Surv. Bull.* 17, 1936 (33-38).
- 631.432.3**—**Carbery, M.; Chakladar, M. N.** Studies on soil-moisture. I. Movement of soil-moisture under field conditions. *Indian J. Agric. Sci.* 6, 1936 (1201-1217).
- 631.432.3**—**Dumansky, A. V.; Chapek, M. V.** Ultraporosity of soils. *Pedology* No. 1, 1936 (47-51). R.e.
- 631.432.3**—**Musgrave, G. W.; Free, G. R.** Some factors which modify the rate and total amount of infiltration of field soils. *J. Amer. Soc. Agron.* 28, 1936 (727-739).
- 631.432.3**—**Nitzsch, W. v.** The pore content of soil. Methods of measurement and their utility. *Bodenk. PflErnähr.* 1, 1936 (101-115). B.C.A. 55 (1170). G.
- 631.432.3**—**Torstensson, G.; Eriksson, S.** A new method for determining the porosity of the soil. *Soil Sci.* 42, 1936 (405-415).
- 631.432.3**—**Baver, L. D.** Soil characteristics influencing the movement and balance of soil moisture. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (431-437).
- 631.432.3**—**Harper, H. J.; Volk, G. W.** A method for the microscopic examination of the natural structure and pore space in soils. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (39-40).
- 631.432.3**—**Hooghoudt, S. B.** The drill hole method of determining the permeability of soil and its practice utility. *Proc. Int. Soc. Soil Sci.* 12, 1937 (12-14). G.
- 631.432.3**—**Oehler, T.** Experiments with trickling movement in moisture-rich and moisture-poor soil. *Proc. Int. Soc. Soil Sci.* 12, 1937 (15-16). G.
- 631.432.3**—**Pearse, C. K.** A simple device for measuring the absorption rates of soils. *Science* 85, 1937 (459-460).
- 631.432.3**: **631.414.2**—**Harper, H. J.** Pore space-clay ratio, an important index to the physical character of soil. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (33-37).
- 631.432.3**: **631.433**—**Powers, W. L.** Soil-water movement as affected by confined air. *J. Agric. Res.* 49, 1934 (1125-1133).
- 631.432.3**: **631.433.2**—**Kuznetsov, A. M.** Soil changes, caused by prolonged action of water. *Izv. Biol. Inst. Perm.* 10, 1936 (467-479). R.e.
- 631.432.3**: **631.433.2**—**Erkin, G. D.** Determination of the permeability of water-logged soils in the field. *Pedology* No. 5, 1937 (693-706). R.g.
- 631.432.3**: **631.62**—**Fausser, O.** Investigations on the effect of drainage on loess soils. *Kulturtech.* 38, 1934 (27-38). G.
- 631.432.3**: **631.67**—**Kachinsky, N. A.** Methods for determining the permeability of soil towards water from the standpoint of irrigation. *Trans. Int. Soc. Soil Sci. Societ. Sect. 1st Comm.* A2, 1934 (79-99). F.
- 631.432.3**: **631.67**—**Kachinsky, N. A.** The influence of the form and size of irrigated squares on the permeability of the soil. *Pedology* No. 1, 1936 (62-77).

# BIBLIOGRAPHY OF SOIL SCIENCE

**631.432.3 : 631.67**—Tsyplenkin, E. I. Technique of the treatment of results of field determinations of permeability. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (349-359). (R.)

**631.432.3 : 631.67** Ryzhov, S. N.; Tikhonova, V. G. The effect of irrigation on the formation of the "plough sole" after deep cultivation. *Khim. Sotsial. Zemled.* No. 6, 1937 (80-85). (R.)

**631.432.4**—Barbier, G. Negative absorption in soil, clay and humus. *C.R.* 193, 1934 (226-228). P.L.S. 9 (163). (F.)

**631.432.4**—Bourenkov, V. A. The adsorption capacity of the soil and a method of determining it. *Trans. Int. Soc. Soil Sci. Soviet Sect. 1st Comm.* A2, 1934 (100-111). (F.)

**631.432.4**—Kuron, H. Experiments on the determination of the surface of soils, clays and similar materials. VII. Combined water of a clay saturated with non-dissociating cations. *Ztschr. Pflanz. Dung.* 36A, 1934 (282-287). (G.)

**631.432.4**—Schofield, R. K. Soil water. *Trans. Int. Soc. Soil Sci. Comm.* 1, Versailles, 1934 (185-191). (E.)

**631.432.4**—Dourmansky, A. V.; Chapek, M. V. The moisture fixing property of soils. *Trans. Int. Soc. Soil Sci. Soviet Sect. A.* 1935 (36-45). (F.)

**631.432.4**—Olmstead, L. B. A mechanized procedure for determining the sticky point of soils. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (5-6).

**631.432.4**—Olmstead, L. B. Minimum water of saturation. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (4-5).

**631.432.4**—Ossin, D. D. On the technique of investigating the water lifting and the water capacity of the soil. *Pedology* No. 1, 1935 (101-114). (R.)

**631.432.4**—Schofield, R. K. The pH of water in soil. *Trans. 3rd Int. Cong. Soil Sci.* 2, 1935 (37-48).

**631.432.4**—Schofield, R. K.; da Costa, J. M. B. The determination of the pH at permanent wilting and at the moisture equivalent by the freezing point method. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (6-10).

**631.432.4**—Trénel, M. The determination of the water holding power of the soil. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (15-17). (G.)

**631.432.4**—Aleshin, S. N. Water adsorption in the soil. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (537-553). (R.)

**631.432.4**—Charlton, J. Single-value soil properties: moisture at the sticky point and R. *Indian J. Agric. Sci.* 6, 1936 (1054-1075).

**631.432.4**—Servy, J. A new index characterizing the drought factor in agronomy. *C.R.* 203, 1936 (1097-1100). (F.)

**631.432.4**—Smith, W. O. Sorption in an ideal soil. *Soil Sci.* 41, 1936 (209-230).

**631.432.4**—Vageler, P. The pH value and osmotic pressure gradient as a criterion of the water economy of soils and as a basis for the calculation of an "effective mean particle size". *Ernähr. Pflanze.* 32, 1936 (228-234). (G.)

**631.432.4**—Durante, D. Classification of soils in relation to their moisture holding capacity. *Ital. Agric.* 74, 1937 (353-360). (I.)

**631.432.4**—Smolik, L. Contribution to the dilatometric determination of the wilting point of soils. *Shorn. Csl. Akad. Zemld.* 12, 1937 (271-275). (Cze.)

# FERTILIZERS AND GENERAL AGRONOMY

- 631.432.4 : 536.666** Davydov, G. K. The heat of wetting of soil. *Trudy Tsentr. Nauch. Inst. Sakh. Prom. (Moscow)* No. 8, 1932 (24-32). F.S.R. 71 (747). [R.v.]
- 631.432.4 : 536.666** Gisiger, L. Contribution to our knowledge of the heat of wetting of meadow soil. *Landw. Jahrb. Schweiz* 10, 1934 (1185-1202). [G.]
- 631.432.4 : 536.666** Tokuoaka, M.; Morooka, H. The heat of wetting of Taiwan soils. *J. Soc. Trop. Agric. Taiwan* 6, 1934 (281). Z.P.D. 42 (111).
- 631.432.4 : 536.666** Zunker, F. Surface tension, absorption and resistance to wetting. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (53-58). [G.]
- 631.432.4 : 536.666** Hoseh, M. Heat of wetting of some soil colloids at different moisture contents. *Soil Sci.* 43, 1937 (257-273).
- 631.432.4 : 536.666 : 631.434** Tisdall, A. L. The heat of wetting as an index of texture in irrigated soils. *Aust. J. Coun. Sci. Indust. Res.* 9, 1936 (295-300).
- 631.432.4 : 539.214** Lebedev, A. F.; Slutskaya, S. The relation between maximum molecular water capacity according to Lebedev and the plasticity coefficient according to Atterberg. *"Mosk. avogadro"* No. 9, 1935 (31-34). *Pedology* 1937 (272).
- 631.432.4 : 539.214** Pankov, A. M. Maximum molecular water capacity and the Atterberg value of plasticity. *Pedology* No. 1, 1935 (57-64). [R.]
- 631.432.4 : 551.577** Deland, R.; Dunnewald, T. J. Efficiency of the moisture supply. *Inter. Soil Surv. Bull.* 17, 1936 (39-40).
- 631.432.4 : 553.97** Feustel, I. C.; Byers, H. G. The comparative moisture-absorbing and moisture-retaining capacities of peat and soil mixtures. *Proc. Soil Sci. Soc. Amer.* 1, 1937, (323-325).
- 631.432.4 : 631.413.41** Magaram, E. E. The properties of the soil at different degrees of unsaturation in relation to the effects of calcium. *Khim. Selsol. Zemled.* No. 12, 1934 (49-61). C.A. 30 (797).
- 631.432.4 : 631.413.41** Coutts, J. R. H. "Single value" soil properties - a study of the significance of certain soil constants. VIII. Relationships between the sticky point and the nature of the exchangeable ions in the soil. *J. Agric. Sci.* 25, 1935 (523-525).
- 631.432.4 : 631.413.41** Bayer, L. D.; Winterkorn, H. Sorption of liquids by soil colloids. II. Surface behaviour in the hydration of clays. *Soil Sci.* 40, 1935 (403-419).
- 631.432.4 : 631.434** Bilashev, G. L. The influence of soil structure, size of soil aggregates and compaction on the water-holding capacity of soils. *Bull. Sverdlovsk. No. 3, 1936 (3-28).* [R.]
- 631.432.4 : 631.436** Holdeheide, W. Influence of temperature on the suction force of soils. *Jahrb. Wiss. Bot.* 81, 1935 (747-768). B.C.A. 35 (209).
- 631.432.4 : 631.544.7** Boynton, D.; Batjer, L. P. The influence of mulching apple trees on the moisture-holding capacity of the top soil. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (92-94). *Hort. Abs.* 6 (245).
- 631.432.4 : 631.824** Échevin, R. The absorbing power of soils for magnesium chloride. *C.R.* 200, 1935 (1243-1245). [F.]

## BIBLIOGRAPHY OF SOIL SCIENCE

**631.432.4 : 631.86—Musgrave, G. W.** The significance of field structure in the water relations of soils. *Amer. Soil Surv. Bull.* 17, 1936 (155-162).

**631.432.4 : 631.874 West, E. S.** A note on the effect of green manuring on the water-holding capacity of soils. *Aust. J. Coun. Sci. Indust. Res.* 9, 1936 (65-66).

**631.432.4.005—Burenkov, V. A.** Suction force of the soil and the method for its determination. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (360-370). [R.]

**631.432.5—Dolgov, S. I.; Korichkin, D. P.** The ventilator method for determining the maximal hygroscopicity. *Khm. Sotsial. Zemled.* No. 8, 1934 (68-71). *Pedology* 1936 (156).

**631.432.5—Smolik, L.** Report on the present position of hygroscopicity. Determinations and proposals for co-operative work. *Trans. Int. Soc. Soil Sci. Comm. I, Versailles, 1934* (193-196). [E.]

**631.432.5—Kuron, H.** Experiments on the determination of total surface of soils, clays and similar materials. VIII. The demarcation of the form in which water is bound in soil by means of its influence upon the reaction between soil and salts. *Ztschr. Pflanz. Düng.* 45, 1936 (352-363). C.A. 30 (8474). [G.]

**631.432.5—Pokrovsky, G. I.** On the amount of hygroscopic water held back in a disperse system. *Pedology* No. 6, 1936 (821-828). [R.]

**631.432.5—Rothe, .** Change of soil with age. *Kulturtech.* 39, 1936 (319-322). [G.]

**631.432.5 : 536.63 Andrianov, P. I.** The heat capacity of unfree water and soil. *Kolloid-Ztschr.* 78, 1937 (107-108). [G.]

**631.432.5 : 631.547.2 Behrens, W. U.** Relationships between soil hygroscopicity, the moisture content in the field and plant growth. *Ztschr. Pflanz. Düng.* 41, 1935 (38-59). [G.]

## 631.433 SOIL AIR

**631.433 Trofimov, A.** The fluctuations of atmospheric pressure in soil and the exchange of soil gases. *Zh. Geofiz.* 4, 1934 (468). Z.P.D. 43 (377). [R.]

**631.433—Romell, L. G.** Mechanism of soil aeration. *Ann. Agron.* 5 (in s.), 1935 (373-384).

**631.433 : 551.577 Minar, M.** Effect of atmospheric precipitation on the  $\text{CO}_2$  content of the soil air and of the atmosphere. *Shorn. Čsl. Akad. Zeml.* 10, 1935 (106-112). [Cz.g.]

**631.433 : 631.414.3 Wiessmann, H.; Neumann, W.** Gas absorption by soil components and soils. I. *Ztschr. Pflanz. Düng.* 40, 1935 (49-81). [G.]

**631.433 : 631.453 Wurmbach, H.** Investigations on the toxicity of soil  $\text{CO}_2$ . *Pflanzenbau* 12, No. 3, 1935 (109-122). *Ann. Agron.* 6 (143).

**631.433.005—Filosofov, B. I.** New apparatus for the determination of air penetration of the soil. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (446-452). [R.]

**631.433.2—Osugi, S.; Morita, S.** On the investigation of soils in paddy and dry field condition. *J. Sci. Soil Japan* 11, 1937 (355-368). [J.e.]

## FERTILIZERS AND GENERAL AGRONOMY

**631.433.2 : 541.134.5**—Sturgis, M. B. Oxidation-reduction capacity and intensity in water-logged soil. *Proc. Assoc. S. Agric. Workers, 34th, 35th and 36th Ann. Conv.* 1933-35 (71-72). C.A. 30 (2679).

**631.433.2 : 541.134.5**—Shibuya, K. ? Saeki, H. ; Ryu, K. The changes of oxidation-reduction potentials of waterlogged soils. *Bull. Agric. Chem. Soc. Japan* 12, 1936 (62-72). [J.e.]

**631.433.2 : 541.134.5**—Shibuya, K. ; Saeki, H. ; Ryu, K. Change of oxidation-reduction potentials of waterlogged soils. II. Lateritic soils and sandstone soils. *J. Agric. Chem. Soc. Japan* 12, 1936 (1141-1151). B.C.A. 56 (267).

**631.433.2 : 541.134.5**—Sturgis, M. B. Changes in the oxidation-reduction equilibrium in soils as related to the physical properties of the soil and the growth of rice. *La. Agric. Expt. Sta. Bull.* 271, 1936, pp. 37. C.A. 30 (5706).

**631.433.2 : 541.134.5**—Shibuya, K. ; Saeki, H. ; Ryu, K. Change of oxidation-reduction potentials of waterlogged soils. III. Humus, alkali, and fish-farm soils. *J. Agric. Chem. Soc. Japan* 13, 1937 (529-536). B.C.A. 56 (1097).

**631.433.2 : 631.417.4**—Sreenivasan, A. ; Subrahmanyam, V. Biochemistry of waterlogged soils. Part IV. Carbon and nitrogen transformations. *J. Agric. Sci.* 25, 1935 (6-21).

**631.433.3**—Smith, F. B. ; Brown, P. E. Oxygen absorption and carbon dioxide production in soils. *Proc. Iowa Acad. Sci.* 40, 1933 (74-75). B.C.A. 54 (1010).

**631.433.3**—Engel, H. Soil respiration. *Zbl. Bakt.* 90, 1934 (158-161). C.A. 29 (2274). G.

**631.433.3 : 631.821.1**—Barritt, N. W. Some effects of liming and crop growth on soil respiration. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (215-216).

## 631.434 SOIL STRUCTURE. TEXTURE

**631.434**—Andrianov, P. I. The problems of agricultural physics. I, II. *Trudy Tsentr. Nauch. Inst. Sakh. Prom. (Moscow)* No. 8, 1932 (5-23). F.S.R. 71 (746). R.e.

**631.434**—Akhromeiko, A. Investigations on the stability of soil structure. *Trans. Int. Soc. Soil Sci. Comm.* 1, Versailles, 1934 (109-113). F.

**631.434**—Andrianov, P. I. Soil formation conditions and the retention of soil structure. *Zschr. Pflanz. Dung.* 36A, 1934 (26-37). G.

**631.434**—Hénin, S. A means of expressing the structural state of soils. *Trans. Int. Soc. Soil Sci. Comm.* 1, Versailles, 1934 (115-120). F.

**631.434**—Mortensen, H. Notes on the paper of Dücker, Gripp and Simon on the problem of soil structure. *Zbl. Min. Geol. Abt. B.* 1934 (45). Z.P.D. 36A (121).

**631.434**—Poser, H. Notes on the problem of soil structure. *Zbl. Min. Geol. Abt. B.* 1934 (39). Z.P.D. 36A (121).

**631.434**—Sokolovsky, A. N. The problem of soil structure. *Trans. Int. Soc. Soil Sci. Comm.* 1, Versailles, 1934 (89-95). [F.]

**631.434**—Sokolovsky, A. N. The problem of soil structure. *Trans. 1st Comm. Int. Soc. Soil Sci. Soviet Sect. A;* 1934 (34-110). [E.]



# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.434 Andrianov, P. I. Conditions of soil structure formation. *Trudy Sekt. Fiz. Pochv. Fiz.-Agroim. Inst.* No. 1, 1935 (45-54). [R.]
- 631.434 Bår, A. L. S. Soil structure. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (17-18). \* G.
- 631.434—Baver, L. D. Factors contributing to the genesis of soil micro-structure. *Amer. Soil Surv. Bull.* 16, 1935 (55-56).
- 631.434 Jones, G. H. Gethin. The texture assessment of soils for survey purposes. *Proc. 2nd Conf. F. Agr. Agric. Chem.* 1934, Abs. 12, 1935 (59-60).
- 631.434 Kivinen, E. The lack of uniformity of cultivated soil. *Agrogeol. Jukl. Finland*, No. 37, 1935, pp. 17. G n.
- 631.434 Könecke, G. Investigations of the so-called settling of the soil. *Kühn-Arch.* 39, 1935 (295). P.T.S. 10 (164).
- 631.434 Kubiena, W. The elementary structure of the soil. *Soil Res.* 4, 1935 (380-412). G et.
- 631.434—Nekrasov, A. A. The dependence of binding forces in granular masses on capillary pressures. *Zh. Tekh. Fiz.* 5, 1935 (1183-1191). C.A. 31 (19).
- 631.434 Forbes, H. Study of clay soil foundation problems based on cyclic-load field tests. *Western Constr. News* 11, 1936 (150-153). C.A. 30 (5339).
- 631.434 Hardy, F. Soil crumb. *Trop. Agric. Trin.* 13, 1936 (143-145).
- 631.434 Hénin, S. Study on the regeneration of "structural elements" of loams. *Ann. Agron.* 6 (n.s.), 1936 (454-472).
- 631.434 Kubiena, W. Contributions to the knowledge of the structure of coherent soil masses. *Baden. Pflanzsch.* 2, 1936 (1-23). [G.]
- 631.434 Meyer, L. Investigations on the optimal form of arable soil structure. *Forschber.* 2, 1936 (236-245). G.
- 631.434 Pokrovsky, G. I. Statistical theory of soil structure. *Pedology* No. 1, 1936 (39-46). [R.]
- 631.434—Russell, E. W. Physical description of soil tilth. *Sands, Clays and Minerals* 2, 1936 (57-63). B.C.A. 45 (562).
- 631.434—Sideri, D. I. On the formation of structure in soil. II. Synthesis of aggregates; on the bonds uniting clay with sand and clay with humus. *Soil Sci.* 42, 1936 (461-479).
- 631.434—Sokolovsky, A. N. Quantitative evaluation of soil structure (comparative dispersity of the soil). *Trans. Soviet Sci. Int. Soc. Soil Sci.* Vol. 5, 1936 (9-12). R.
- 631.434—Transactions of the Soviet Section of the International Society of Soil Science. Soil structure. *Trans. Soviet Sci. Int. Soc. Soil Sci.* Vol. 5, 1936 (184-208). [R.]
- 631.434—Hénin, S. Mechanism of the spontaneous destruction of soil aggregates in water. *C.R. Acad. Agric.* 23, 1937 (658-666). F.
- 631.434—Sideri, D. I. On the formation of structure in soil. III. Mechanism of the swelling of soil. *Soil Sci.* 43, 1937 (43-47).
- 631.434: 536.666 Tisdall, A. L. The heat of wetting as an index of texture in irrigated soils. *Aust. J. Coun. Sci. Indust. Res.* 9, 1936 (295-300). C.A. 31 (1298).
- 631.434: 539.214—Novak, V.; Hrubec, P. A study of the relations between consistency and texture in soils. II. Relations

# FERTILIZERS AND GENERAL AGRONOMY

between soil texture, and plasticity and hygroscopicity values. *Sborn. Čsl. Akad. Zeměd.* 11, 1936 (611-616). [Cz.g.]

**631.434:539.41**—Carnes, A. Soil crusts: Methods of study, their strength, and a method of overcoming their injury to cotton stands. *Agric. Engng.* 15, 1934 (167-169, 171). E.S.R. 71 (708).

**631.434:539.41**—Rabinerson, A.; Fuchs. Viscometry as a method of investigating the structure of soil colloids. *Trans. Int. Soc. Soil Sci. Soviet Sect. 1st Comm.* A2, 1934 (160-163). [F.]

**631.434:539.41**—Koliasev, F. E.; Vershynin, P. V. The problem of the formation of a solid soil structure. *Trans. Int. Soc. Soil Sci. Soviet Sect. A*, 1935 (46-63).

**631.434:539.41**—Solechnik, N. Y.; Novosiltseva, N. D. Structure-forming cements. *Trudy Sekts. Fiz. Pochv. Fiz.-Agron. Inst. No. 1*, 1935 (31-44). [R.e.]

**631.434:539.41**—Vershynin, P. V. Formation of an artificial structure. *Trudy Sekts. Fiz. Pochv. Fiz.-Agron. Inst. No. 1*, 1935 (17-29). [R.e.]

**631.434:539.41**—Filatov, M. M. The microstructure of earths in relation to their deformation under stress. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (13-28). [R.]

**631.434:539.41**—Kus'michev, I. P. Control of soil crusts under irrigation conditions by means of surface-active materials. *Khim. Sotsial. Zemled.* Nos. 7-8, 1936 (166-170). [R.e.]

**631.434:539.41**—Novak, V.; Hrubes, P. A study of the relation between consistency and texture of soils. *Sborn. Čsl. Akad. Zeměd.* 11, 1936 (151-159). [Cz. g.]

**631.434:539.41**—Blair, G. W. Scott. Compressibility curves as a quantitative measure of soil tilth. *J. Agric. Sci.* 27, 1937 (541-556).

**631.434:539.41**—Vershynin, P. V.; Konstantinova, V. P. Water-resisting property and strength of compression of soil samples as connected with the original moisture content. *Pedology* No. 2, 1937 (176-183). [R.e.]

**631.434:551.577**—Rabinovich, I. E. The influence of climatic factors on the formation of soil crust. *Bull. SoiusNIKhl.* No. 3, 1936 (41-58). [R.e.]

**631.434:631.411.3**—Schwalen, H. C. Effect of soil texture upon the physical characteristics of adobe bricks. *Ariz. Agric. Expt. Sta. Tech. Bull.* 53, 1935 (275-293).

**631.434:631.413.41**—Hénin, S. Study of soil structure. Influence of some factors on the stability of soil structure. *Ann. Agron.* 5, (n.s.), 1935 (44-50). [F.]

**631.434:631.413.41**—Kotzmann, L. G. Relation between the physical properties and the nature of adsorbed bases in soil. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (24-26). [G.]

**631.434:631.413.41**—Russell, E. W. The binding forces between clay particles in a soil crumb. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (26-29).

**631.434:631.413.41**—Perkins, A. T.; King, H. H. Base exchange in soil separates and soil fractions (sand and silt). *Soil Sci.* 42, 1936 (323-326).

**631.434:631.413.41**—Webb, D. H.; Jennings, D. S.; Peterson, J. D. The effect of replaceable bases on the physical properties of soils with special reference to the effect of replaceable calcium and sodium on index of friability. *Soil Sci.* 41, 1936 (13-24).

# BIBLIOGRAPHY OF SOIL SCIENCE

**631.434 : 631.413.41**—Veißmeyer, F. J. ; Hendrickson, A. H. The effect of the replacement of other cations by sodium on the dispersion of soils. *Science* 86, 1937 (59-60).

**631.434 : 631.416.4**—Kling, M. ; Engels, O. Relations between the mechanical composition of soil types and their root-soluble potassium content. *Ztschr. Pflanz. Düng.* 39, 1935 (24-28).

**631.434 : 631.416.7**—Baver, L. D. Aggregation of soils and calcium ion saturation. *Amer. Soil Surv. Bull.* 17, 1936 (28-30).

**631.434 : 631.416.7**—Bradfield, R. The value and limitations of calcium in soil structure. *Amer. Soil Surv. Bull.* 17, 1936 (31-32).

**631.434 : 631.416.872**—Lutz, J. F. The relation of free iron in the soil to aggregation. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (43-45).

**631.434 : 631.417.2**—Heltzer, F. J. The importance of physical properties of soil under irrigation in Turkestan and factors to which they are due. *Trans. Int. Soc. Soil Sci. Soviet Sect. 1st Comm. A2*, 1934 (73-78). [R.]

**631.434 : 631.417.2**—Sreenivasan, A. ; Subrahmanyan, V. Investigations on the rôle of organic matter in plant nutrition. Part III—Influence of the decomposition of organic matter on soil structure. *Mem. Indian Inst. Sci.* 1, 1934 (123-132) from *Proc. Indian Acad. Sci.* 1, 1934.

**631.434 : 631.417.2**—Clarke, G. R. Humus and soil structure in the field. *Forestry* 9, 1935 (42-53).

**631.434 : 631.417.2**—Paschall, A. H. ; Burke, R. T. A. ; Baver, L. D. Aggregation studies on the Muskingum, Chester and Lansdale silt loams. *Amer. Soil Surv. Bull.* 16, 1935 (44-45).

**631.434 : 631.417.2**—Williams, W. R. Stability and cohesion in soil structure. *Pedology* No. 5 6, 1935 (746-762). [R.]

**631.434 : 631.417.2**—Heltzer, F. J. The significance of the physical conditions of the soil under the conditions of irrigated agriculture of Central Asia and the factors causing them. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (115-120). [R.]

**631.434 : 631.43**—Galletti, A. Correlation between the size of particles and physical properties of a soil. *Ann. Sta. Sper. Agrar. Modena* 3, in Sci., 1932-34. [R.] A. 55 (466). P.I.S. 10 (7). [R.]

**631.434 : 631.432.2**—Vilensky, D. Influence of soil moisture on its structure. *Trans. Int. Soc. Soil Sci. Comm. 1, Versailles*, 1934 (97-108). [R.]

**631.434 : 631.432.2**—Sideri, D. I. Swelling of the soil in relation to soil structure. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (126-147). [R.]

**631.434 : 631.432.2**—Tsyganov, M. S. The influence of moistening and other natural factors on the dynamics of the aggregate composition of soils. *Pedology* No. 1, 1936 (125-131). [R.]

**631.434 : 631.432.2**—Vilensky, D. The effect of soil moisture during cultivation on the stability of soil structure. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (107-114).

**631.434 : 631.432.2**—Gor'kova, I. M. Artificial structure formation in solonchak soils. *Pedology* No. 2, 1937 (222-237). [R.]

**631.434 : 631.432.2**—Koposov, I. P. On the possibility of artificial structure-formation in chernozem soils. *Pedology* No. 2, 1937 (184-221). [R.]

# FERTILIZERS AND GENERAL AGRONOMY

**631.434 : 631.432.21** —Kurtener, A. V. ; Romanova, M. The influence of artificial structure formation on the rapidity of evaporation of soil moisture. *Trudy Sekt. Fiz. Pochv Fis.-Agron. Inst.* No. 1, 1935 (127-219). [R.]

**631.434 : 631.432.21** —Kurtener, A. V. ; Romanova, M. The influence of artificial structure formation on the rapidity of evaporation of soil moisture. *Pedology* No. 2, 1935 (198-201). [R.]

**631.434 : 631.432.21** —Ursulov, A. N. The evaporating capacity of the different structural fractions of soil. *Pedology* No. 4, 1937 (567-579). [R.e.]

**631.434 : 631.432.3** Ryzhov, S. N. The effect of the texture of the surface layer of a soil on its permeability. *Bull. SovnizNIKhl.* No. 7, 1935 (84-95). [R.e.]

**631.434 : 631.432.3** Rozov, L. P. A system of mechanical analyses instead of one analysis as a method for characterizing the water-physical properties of soil. *Trans. Soviet Sci. Int. Soc. Soil Sci.* Vol. 5, 1936 (494-509). [R.]

**631.434 : 631.436.6** Hénin, S. Effect of frost on the structure of silt soils. *C.R. Acad. Agric.* 22, 1936 (57-61). [R.]

**631.434 : 631.436.6** Pratolongo, U. ; Caldarola, V. Variation in the volume of soils caused by freezing. *Rend. Ist. Lombardo Sci.* 69, 1936 (1008-1014). [I.]

**631.434 : 631.452** Burov, D. I. Soil structure as a factor in the fertility and the conditions of the chernozem zone of the left bank of the middle course of the Volga. *Izv. Kubyshevskogo S.-Kh. Inst.* No. 1, 1935 (126-156). *Pedology* 1936 (883).

**631.434 : 631.46** Duggell, M. On the effects which constant "treading down" produces on the physical and biological characteristics of the forest soil. *Schweiz. Ztschr. Forstw.* 88, 1937 (151-165). [C.M.R. 17 (9)]. [G.]

**631.434 : 631.461.1.3** Simakov, V. N. ; Isakova, A. I. Influence of mechanical composition of soil on the decomposition of added organic materials. *Trudy LOMU.A.I.* 37 (No. 1), 1935 (35-66). *Pedology* 1936 (928). [R.]

**631.434 : 631.51** Savvinov, N. I. Soil structure and its stability in immature soils, uncultivated fallow and on continuously cultivated land. *Selskokhoz. 1931. Z.P.D.* 38 (183). [R.]

**631.434 : 631.51** Chizhevsky, M. G. ; Kolobova, Z. I. The technique of determining the structural stability of soil in relation to its mechanical cultivation. *Pedology* No. 1, 1935 (7-33). [R.g.]

**631.434 : 631.51** Apsits, J. The influence of artificial and natural factors on soil structure. *Ztschr. Pflanz. Dung.* 42, 1936 (1-35). [G.]

**631.434 : 631.51** Culpin, C. Studies on the relation between cultivation implements, soil structure and the crop. I. Some preliminary observations on the measurement of soil structure, with a description of an instrument for the measurement of soil resistance. *J. Agric. Sci.* 26, 1936 (22-35).

**631.434 : 631.51** Culpin, C. Studies on the relation between cultivation implements, soil structure and the crop. II. The effects of the Fowler "gyrotiller" on the soil. *J. Agric. Sci.* 26, 1936 (45-58).

**631.434 : 631.51** Krasinsky, A. P. Dynamics of certain elements of soil structure in a soil previously mechanically pulverized. *Khim. Sotstal. Zemled.* No. 7-8, 1936 (128-145). [R.]

# BIBLIOGRAPHY OF SOIL SCIENCE

**631.434:631.51--Tsyganov, M. S.** The effect of mechanical cultivation of dry and moistened soil on its structure. *Khim. Sotsial. Zemled.* No. 10, 1936 (68-78). [R.]

**631.434:631.51 Ripley, P. O.** Soil cultivation and tilth. *Sci. Agric.* 17, 1937 (270-278).

**631.434:631.51 Schmitz, F. D.** The determination of the effect of soil cultivation on the physico-mechanical status of cultivated soil. *Forsch.Dienst.* 4, 1937 (267-275). [G.]

**631.434:631.515 Culpin, C.** Studies on the relation between cultivation implements, soil structure and the crop. III. Rolls: an account of methods employed in a study of their actions on the soil. *J. Agric. Sci.* 27, 1937 (432-446).

**631.434:631.547.2 Kutsenko, A. I.** Relation between the differences in plant growth under field conditions and the soil properties. *Trudy Gidroz. Inst. Udobr. Leningr. Lab.* 45, 1936 (185-212). [R.]

**631.434:631.547.2 Apsits, J.** Soil structure and plant growth. *Bodenk. Pflernahr.* 3, 1937 (336-345). [G.]

**631.434:631.58 Sundaram, S.** Effect of cropping on the texture of the soil. *Proc. Assoc. Econ. Biol. Cambodge* 1934, 2, 1935 (5-8).

**631.434:631.581 Ilmenev, S. I.** The effect of agricultural plants and fallowing on the aggregate composition of podzol soils. *Khim. Sotsial. Zemled.* No. 6, 1935 (81-89). [R.]

**631.434:631.81 Savvinov, N. I.** Fertilizers which affect the physical structure of soil. *Trans. Int. Soc. Soil Sci. Soviet Sect. 1st Comm.* A2, 1944 (69-72). [R.]

**631.434:631.81 Zaprometov, B. G.; Kolmakov, B. P.** Action of electrolytes, mineral fertilizers, on soil microstructure. *Bull. Sredniz. Univ.* No. 19, 1934 (23-28). [B.C.A. 55 (949)]

**631.434:631.81 Ilmenev, S.I.** The effect of an out crop manure and lime on the aggregate composition of the soil. *Khim. Sotsial. Zemled.* Nos. 11-12, 1935 (153-160). [R.]

**631.434:631.81 Kanivets, I. I.; Korneeva, N. P.** The dynamics of soil structure during the vegetative period and the increase of the elements of stability under the influence of manure and cellulose. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (131-136). [R.]

**631.434:631.81 Onodera, I.; Hasegawa, H.** Sulphates and chlorides as fertilizers. *J. Agric. Chem. Soc. Japan* 12, 1936 (313-319). [B.C.A. 55 (707)]

**631.434:631.81 Savvinov, N. I.** Physical structure forming fertilizers for soils. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (103-106). [R.]

**631.434:631.81 Vershynin, P. V.** Artificial structure of the soil. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (43-57). [R.]

**631.434:631.811.8 Sokolov, A. V.** The importance of soil type and mechanical composition of the soil as regards the sensitivity of plants to chloride. *Trudy Nauch. Inst. Udobr.* 1935 (23-32). [R.]

**631.434:631.821.1 Goy, S.; Roos, O.** The significance of the degree of dispersion in the determination of the physical and nutrient status of soils. Lime study, XXVI (1). *Bodenk. Pflernahr.* 4, 1937 (233-243).

## FERTILIZERS AND GENERAL AGRONOMY

**631.434 : 631.86**—**Kanivets, I. I.**; **Korneeva, N. P.** The dynamics of soil structure during the vegetative period and the increase of the elements of stability under the influence of manure and cellulose. *Sborn. Rab. VNIIS* 1936 (391-394). [R.]

**631.434 : 631.86**—**Radchenko, A. G.**; **Korneeva, N. P.** The effect of manure,  $\text{CaCO}_3$  and rotted matter on the physico-mechanical and chemico-biological processes in podzolized soils. *Sborn. Rab. VNIIS* 1936 (431-441). [R.]

**631.434 : 631.87**—**Zaprometov**; **Smolina**; **Shamsiev.** Structural changes, occurring in Middle Asia clays under the influence of peptization. *Kolloid. Zh.* 2, 1936 (3-15). *Pedology* 1936 (887). [R.]

**631.434 : 633.2**—**Rostovtseva, O. S.**; **Avaeva, M. I.** The rôle of perennial grasses in the formation of compact soil structure. *Pedology* 5, 6, 1935 (797-814). [R.]

**631.434 : 633.2**—**Savvinov, N. I.** The effect of perennial grasses and certain agrotechnical methods on the stability of soil structure in different zones. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (58-102). [R.]

**631.434 : 633.2**—**Williams, W. R.** The rôle of soil structure in socialist agriculture. *Vest. Akad. Nauk* No. 7-8, 1936 (21-38). *Pedology* 1936 (882).

**631.434 : 633.2**—**Olofsson, S.** Pasture leys and soil conditions. *Scensk Land.* 21, 1937 (448-450). *Herb. Abs.* 7 (262).

**631.434 : 633.71**—**Krasinsky, A. P.**; **Zaitseva, E. V.** Tobacco as an indicator of the physical properties of soils, under the conditions of soil aggregates of different sizes. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (163-183). [R.]

**631.434 (083.72)**—**Tommerup, E. C.** The field description of the physical properties of soils. *Trans. Int. Soc. Soil Sci. Comm. 1, Versailles, 1934* (155-158). [E.]

**631.434 (083.72)**—**Sibirsky, V.** The nomenclature and classification of mechanical fractions of soils and foundation soils. *Pedology* No. 3, 1937 (344-353). [R.]

**631.434.005**—**Singh, B. N.**; **Mathur, P. B.** Apparatus for the measurement of shrinkage coefficient of soils. *Soil Sci.* 43, 1937 (37-41).

## 631.436 SOIL TEMPERATURE

**631.436**—**Ramdas, L. A.**; **Dravid, R. K.** Soil temperatures. *Curr. Sci.* 3, 1934 (266-268).

**631.436**—**Kurtener, A. V.** Methods for determining the heat conductivity of the soil. *Trudy Sekt. Fiz. Pochv. Fiz.-Agron. Inst.* No. 1, 1935 (65-76). [R.]

**631.436**—**Eblé, L.** Soil temperature. *Ann. Agron.* 6, n.s., 1936 (659-676). [E.]

**631.436**—**Kriukov, P. A.** Nature of heat transfer in suspensions of soil slimes and silts. *Kolloid. Zh.* 2, 1936 (270-280). *C.A.* 30 (6489).

**631.436**—**Aleksandrov, B. P.**; **Kurtener, A. V.** Some possibilities of artificially influencing the heat balance of soil. *Pedology* No. 1, 1937 (82-90). [R.]

**631.436 : 535.21**—**Smolik, L.** Contribution to the climatology of shaded sites. 1. Temperature of the soil in sunlight and in shadow. *Sborn. Čsl. Akad. Zeměd.* 10, 1935 (202-203).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.436:551.5—Brazier, C. E.; Eblé, L.** Measurement of temperatures near the soil. *C.R. Acad. Agric.* 19, 1933 (1050-1054). *C.R.* 197, 1932 (1678-1680). [F.]
- 631.436:551.5—Carton, P.** Methods of observing the temperature of the air at the surface of the soil. *Météorologie* 11 (n.s.), No. 118, 1935 (27-31). E.S.R. 73 (443).
- 631.436:551.5—Kreutz, W.** The aim and function of agricultural meteorology as represented by different researches. *Lunds. Jahrb.* 81, 1935 (743-827). [G.]
- 631.436:581.5 Conway, V. M.** Studies in the autecology of *Cladium Mariscus* R. Br. II. Environmental conditions at Wicken Fen, with special reference to soil temperatures and the soil atmosphere. *New Phytol.* 35, 1936 (359-380).
- 631.436:631.432.2 Brazier, C. E.; Eblé, L.** On a peculiarity of the transmission of heat in the soil. *C.R. Acad. Agric.* 21, 1935, (813-815). [F.]
- 631.436:631.432.2 Kreutz, W.; Rohweder, M.** Correlation analyses of the course of temperature and moisture in widely different soils and in the air near the soil. *Reichsanst. f. Wetterdienst* 1, No. 9, 1936, pp. 20. *Forschdienst.* 2 (139).
- 631.436:631.544.7 Aleksandrov, A. D.** Problem of improving the soil microclimate. *Soviet Bot.* 6, 1934 (68-93). *Pedology* 1937 (275).
- 631.436:631.544.7 Makarevsky, N. I.** The effect of mulching on the temperature regime of the soil. *Trans. Soviet Sci. Int. Soc. Soil Sci.* Vol. 5, 1936 (300-332). [R.]
- 631.436:631.544.7 Smith, G. E. P.** Control of high soil temperature. *Agric. Engng.* 17, 1936 (383-385).
- 631.436:631.547.2 Musso, J. O.** The influence of soil temperature on plant development. *Atchi. Pflanz. Dng.* 40, 1935 (311-322). [G.]
- 631.436:631.67 Khudiakov, S. D.** Thermal regime in soils under irrigation. *Selskoi Zem. Khoz.* No. 4, 1935 (40-45). [R.]
- 631.436.005 Aleksandrov, B. P.; Kurtener, A. V.** A new method for measuring the constant of soil radiation. *Trudy Sekt. Fiz. Poch. Fiz.-Agrom. Inst.* No. 1, 1935 (55-63). [R.]
- 631.436.005 Mail, G. A.** Soil temperature apparatus for field work. *Soil Sci.* 40, 1935 (285-286).
- 631.436.005 Zil'berman, A. N.; Liubimov, A. P.; Bazhenova, A. P.** Investigations on the freezing and thawing of soil by the electrical conductivity method. *Zh. Geofiz.* 5, No. 1, 1935 (116-127). *Pedology* 1937 (274).
- 631.436.005 Mail, G. A.** Accuracy of a soil thermograph. *Soil Sci.* 43, 1937 (27-30).
- 631.436.005 Turnage, W. V.** Note on accuracy of soil thermograph. *Soil Sci.* 43, 1937 (475-476).
- 631.436.6 Lozinski, W.** Palson fields and periglacial soil formation. *Neues Jahrb. Min. Geol.* 71, Abt. B. 1933 (18). Z.P.D. 36A (121).
- 631.436.6—Bac, S.** Fluctuations of soil layers during freezing and thawing. *Rocz. Nauk Roln.* 33, 1934 (167-178). [P.]
- 631.436.6—Geslin, H.** Soil temperature. The specific action of cold. Its consequences from the point of view of agriculture. *Trans. Int. Soc. Soil Sci. Comm. I, Versailles*, 1934 (247-270). [F.]

## FERTILIZERS AND GENERAL AGRONOMY

**631.436.6 Hopf, —.** Do we utilize spring frost? *Landw. Fachpresse Tschsch.* 12, 1934 (49). Z.P.D. 37 (246).

**631.436.6 -Beskow, G.** Soil freezing and frost heaving. *Sverig. Geol. Unders. Arsb.* 375, 1935, pp. 242. [Swe.]

**631.436.6 -Mitscherlich, E.** The effect of frost on the soil. *Erndhr. Pflanze* 31, 1935 (141-142).

**631.436.6 Münichsdorfer, F.** The mechanical action of ground frost. *Erndhr. Pflanze* 31, 1935 (61-66). [G.e.]

**631.436.6 -Franck, O.** Frost penetration in cultivated soil. *Medd. Cent.Anst. Forsöksv. Jordbr.* No. 462, 1936, pp. 37. E.S.R. 76 (587).

**631.436.6 -Fukuda, H.** Ice filaments in soil. *J. Coll. Agric. Tokyo* 13, 1936 (453-480).

**631.436.6 : 537.226.1 -Alexander, L. T.; Shaw, T. M.** A method for determining ice-water relationships by measurements of dielectric constant changes. *Nature* 139, 1937 (1109-1110).

**631.436.6 : 537.226.1 -Alexander, L. T.; Shaw, T. M.; Muckenhirn, R. J.** Detection of freezing point by dielectric measurements. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (113-119).

**631.436.6 : 631.432 -Franck, O.** Investigations into the connection between soil freezing and the level of the ground water, and the depths to which frost penetrates cultivated ground in different parts of Sweden. *Kgl. Landbr.högsk. Handl. Tidskr.* No. 1, 1936 (38-72). [Swe.]

**631.436.6 : 631.547.2 -Bacsó, F. v.** The significance for plant growth of cooling in the neighbourhood of the soil. *Mezőg. Kutat.* 8, 1935 (62-67). [H.g.]

**631.436.6 : 631.822 -Vesikivi, A.** Results of soil frost measurements on moor soils. *Finska MosshFören. Arsb.* 38, 1934 (146-154). *Jahrb. Moork.* 1936 (53). [F.sw.]

## 631.437 ELECTRICAL PROPERTIES OF SOILS

**631.437 -McPetric, J. S.** A determination of the electrical constants of the earth's surface at wave-lengths of 1.5 and 0.46 m. *Proc. Phys. Soc.* 46, 1934 (637-648).

**631.437 -Smith-Rose, R. L.; McPetric, J. S.** The measurement of the electrical constants of soil by a Lecher-wire method at a wave-length of 1.5 m. *Proc. Phys. Soc.* 46, 1934 (649-658).

**631.437.1 -Balygin, I. K.; Vorob'ev, V. I.** Measurements of the dielectric constant and the specific electrical conductivity of soils. *Zh. Tekh. Fiz.* 4, 1934 (1836-1843). C.A. 29 (8198).

**631.437.2 -Cutler, J. V.; Malherbe, I. de V.** Electrolysis as a means of measuring fertility. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (95-97).

**631.437.2 Reifenberg, A.** Cataphoresis in soil science. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (38-40).

**631.437.2 Aleshin, S. N.** Electrolysis of soils. *Kolloid. Zh.* 2, 1936 (749-755). B.C.A. 56 (594). [R.]

**631.437.2 -Prince, A. L.; Toth, S. J.** Electrolysis and cation exchange studies on soils with varying organic matter content. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (193).

**631.437.2 : 631.416.2 -Smolík, L.** Comparison of Truog's extraction method and dialysis for phosphate in soils. *Vest. Čsl. Akad. Zeměd.* 10, 1934 (602-606). B.C.A. 54 (865).



## BIBLIOGRAPHY OF SOIL SCIENCE

**631.437.2:631.416.2—Sobolev, F.; Wais-Kalinkova, T.** Electrolysis as a method for separating potassium and mobile phosphates from the soil. *Khim. Sotsial. Zemled.* No. 10, 1934, (65-73). *Pedology* 1936 (160).

**631.437.2:631.416.2—Goodwin, J. B.** The use of electro-dialysis for estimating phosphate availability in calcareous soils. *Colo. Agric. Expt. Sta. Tech. Bull.* 12, 1935, pp. 32.

**631.437.2:631.416.2—Piatenko, A. I.; Kolesnikova, K. G.** Electrolysis as a method for the determination of available  $P_2O_5$  in carbonate soils. *Khim. Sotsial. Zemled.* Nos. 11-12, 1935 (116-128). [R.g.]

**631.437.2:631.416.4—Sobolev, F.; Wais-Kalinkova, T.** Electrolysis as a method for separating potassium and mobile phosphates from the soil. *Khim. Sotsial. Zemled.* No. 10, 1934 (65-73). *Pedology* 1936 (160).

**631.437.2.005—Kaluzhny, V. E.** Methods of separating soil colloids by cataphoresis. *Trudi Inst. Agrokant. Khim.* 2, 1936 (105-113). [U.c.]

**631.437.2.005—Köttgen, P.** The estimation of easily soluble and sorptively bound ions by the methods of the Giessen Soil Scientific Institute. *Bodenk. Pflernähr.* 3, 1937 (56-89). C.A. 31 (437). G.]

**631.437.2.005—Puri, A. N.; Hoon, R. C.** Studies in the electrolysis of soils: I. Electrolysis by the rotating cathode. *Soil Sci.* 43, 1937 (305-309).

### 631.44 SOIL CLASSIFICATION. SOIL TYPES

**631.44—Bushnell, T. M.** Taxonomic considerations in soil correlation. *Amer. Soil Surv. Bull.* 15, 1934 (110-114). E.S.R. 74 (601).

**631.44—Shaw, C. F.** What characteristics distinguish pedalfers from pedocals? *Amer. Soil Surv. Bull.* 16, 1935 (5). B.C.A. 55 (383).

**631.44—Csiky, J. S.** Agricultural soil classification on the basis of Sigmund's general soil system. I. *Mezőg. Kutat.* 9, 1936 (209-246). [H.e.]

**631.44—Grenng, R.** Technically important properties of soils and rocks. A. Soil types, their classification, recognition, and important properties. *Petroleum* 32, No. 25, 1936 (1-7). B.C.A. 55 (805).

**631.44—Csiky, J. S.** Agricultural soil classification on the basis of Sigmund's general soil system. II. *Mezőg. Kutat.* 10, 1937 (61-89). [H.e.]

**631.44—Merriam, W. B.** Maturital soil classification as an aid in analysing regional settlement. *Geog. Rev.* 27, 1937 (325-326).

**631.44—Seki, T.** Stremme's new classification of the soil groups, especially of the wet soil types. *J. Sci. Soil Japan* 11, 1937 (217-228). [J.e.]

**631.44—Veatch, J. O.** The geographic significance of soil type. *Geog. Rev.* 27, 1937 (310).

**631.44:312—Hugo, C. F.** A study of the geographical distribution of population within the magisterial district of Pretoria and the adjacent portion of the district of Brits. *S. Afric. Geog. J.* 18, Dec. 1935 (22-42).

## FERTILIZERS AND GENERAL AGRONOMY

**631.44:549—Hart, R.** Soil mineralogy applied to problems of classification. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (161-162).

**631.44:581.5—Braun, E. L.** The vegetation of Pine Mountain, Kentucky: an analysis of the influence of soils and slope exposure as determined by geological structure. *Amer. Midland Nat.* 16, 1935 (517-563). *Biol. Abs.* 11 (21).

**631.44:581.5—Holliday, R.** The effect of the soil and time factors in plant colonization of soils derived from carboniferous rock. *Naturalist* No. 940, 1935 (97-108). *Rev. Geol.* 16 (188).

**631.44:631.416—Killinger, G. B.; Smith, F. B.** Variations in the chemical composition of soils of various types. *Proc. Iowa Acad. Sci.* 40, 1933 (95). *C.A.* 29 (2639).

**631.44:631.416—Kudrin, S. A.; Rozanov, A. N.** Soil survey from the perspective of chemization. *Bull. SozuzNIKhI*, No. 6, 1935 (59-186). *C.A.* 30 (7266).

**631.44:631.416—Sigmond, A. A. J. de.** Chemical principles for characterizing soil. *Trans. 3rd Int. Cong. Soil Sci.* 2, 1935 (49-60). 1.

**631.44:631.416—Sigmond, A. A. J. de.** The practical use of my general soil system. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (334-338).

**631.44:631.416—Sigmond, A. A. J. de.** The determination of dynamic soil types on a chemical basis. *Zt.-Ch. Pflanz. Dung.* 44, 1936 (24-44).

**631.44:631.416—Bryan, O. C.** The availability of the essential nutritive elements as affected by soil types. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (121-123).

**631.44:631.416—Conrey, G. W.** Chemical characteristics as factor in determination of class and use of land. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (459-462).

**631.44:631.452—Baker, G. O.; Vandecaveye, S. C.** Effect of fertilizers, soil type, and certain climatic factors on the yield composition of oats and vetch. *J. Agric. Res.* 50, 1935 (961-974).

**631.44:631.452—Barnes, C. P.** A classification of natural land-types according to productivity, based on the soil survey. *Amer. Soil Surv. Bull.* 16, 1935 (36-38).

**631.44:631.452—Conrey, G. W.** Soil type as a basis for land appraisal in the Muskingum Watershed Conservancy District. *Amer. Soil Surv. Bull.* 16, 1935 (42).

**631.44:631.452—Whitson, A. R.** Land classification in Wisconsin. *Amer. Soil Surv. Bull.* 16, 1935 (39-41).

**631.44:631.452—Davis, F. L.** A study of the uniformity of soil types and of the fundamental differences between the different soil series. *Ala. Agric. Expt. Sta. Bull.* 244, 1936, pp. 153.

**631.44:631.461—Genkel, P. A.; Borodina, S. F.** Bacterioscopic characterization of alluvial soils. *Mikrobiologia* 4, 1935 (587-592). *Re.*

**631.44:637.4—Coles, R.** Egg quality: the influence of climate and soil. *J. Min. Agric.* 43, 1936 (317-332).

**631.44(083.72)—Crowther, E. M.** Some inductive methods in pedology. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (339-343).

**631.44(083.72)—Milne, G.** Del Villar's definition of alluvial soils. *Proc. 2nd Conf. E. Afric. Agric. Chem.* 1934, Abs. 4, 1935 (50).

## BIBLIOGRAPHY OF SOIL SCIENCE

**631.44(083.72)—Milne, G.** Some suggested units of classification and mapping particularly for East African soils. *Proc. 2nd Conf. E. Afric. Agric. Chem.* 1934, Abs. 2, 1935 (48-49).

**631.44(083.72)—Milne, G.** Some suggested units of classification and mapping, particularly for East African soils. *Soil Res.* 4, 1935 (183-198).

**631.44(083.72)—Prasolov, L. I.** On the problem of soil classification and nomenclature. *Trans. Dokuchaev Inst.* 13, 1936 (101-111). [R.]

**631.44(083.72)—Prasolov, L. I.** A uniform nomenclature and the basis of a genetic soil classification. *Pedology* No. 6, 1937 (775-791). [R.]

### 631.445 CLIMATIC SOIL TYPES

**631.445—Gerasimov, I. P.** New ideas in soil geography. *Pedology* No. 2, 1935 (239-258). [R.]

**631.445—Novak, V.** On soil types. *Landau-Leningradskaya* 1937 (24-27). [G.]

**631.445:539.214—Hrubes, P.** A study of the consistency boundaries and the stability of some climato-genetic soil types. *Shorn. Čd. Akad. Zemi* 10, 1935 (264-271). [Cz.]

**631.445:549—Carroll, D.** Mineralogy of the fine sands of some podzols, tropical, mallic and lateritic soils. *J. Roy. Soc. W. Aust.* 20, 1933-34 (71-102).

**631.445:551.58—Gerasimov, I. P.** Soil-climatic faunas of the plains of the U.S.S.R. and of adjacent countries. *Trans. Dokuchaev Inst.* 8, 1933, pp. 38. [R.]

**631.445:581.5—Polynov, B. B.** Principles of the genetic classification of soils. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (158-160).

**631.445:581.5—Aubert, G.** Relation between pedology and botanical geography. *Bull. Assoc. Franç. Ét. Sol* 3, 1937 (115-120). [F.]

**631.445:631.413.41—Remesov, N. P.** Exchange cations in soils of U.S.S.R. *Trudy Nauch. Inst. Udob.* 1935 (7-22). [B.C.A. 54 (1156).] [E.]

**631.445:631.413.41—Kawashima, R.** Exchangeable cation content as related to climatic soil types in Manchuria. *J. Agric. Chem. Soc. Japan* 12, 1936 (773-782). [B.C.A. 55 (1114).]

**631.445:631.43—Novak, V.; Hrubes, P.** Some physical properties of soil pastes in compact structure after drying. *Shorn. Čd. Akad. Zemi* 11, 1936 (555-561). [Cz.]

**631.445:631.452—Rozhanets, M. I.** The genetic soils range within the limits of the Central-European part of the U.S.S.R. and their yielding capacity. *Trudy Geog. Econ. Nauch.-Issled. Inst.* No. 4, 1934 (9-30). *Pedology* 1936 (648).

**631.445:631.48—Vilensky, D. G.** Some regularities of development of the soil-forming processes. *Pedology* No. 6, 1937 (792-809). [R.]

**631.445:631.58—Zakharov, S. A.** Cultivated soils and their planned development in the different soil-climatic zones of the U.S.S.R. *Pedology* No. 4, 1936 (540-561). [R.]

**631.445.1—Dokturovsky, V. S.** Moor research in the U.S.S.R. *Trans. Int. Soc. Soil Sci. Soviet Sect. A.* 1935 (207-213). [G.]

# FERTILIZERS AND GENERAL AGRONOMY

- 631.445.1 : 631.81** Osvald, H. Fertilization of moorland soils. Swedish experiments. *Superphosphate* 7, 1934 (214-219).
- 631.445.1 : 631.81** Rinné, L. Fertilization of Estonian moorland soils in accordance with up-to-date principles. *Agronomiia, Tartu*, 14, No. 5, 1934. *Superphosphate* 7, 1934 (212-214).
- 631.445.1 : 631.81** Brüne, F. Soil science and moor cultivation. *Trans. 3rd Int. Cong. Soil Sci.*, 2, 1935 (164-180). [G.]
- 631.445.1 : 631.81** Pohjakallio, O. Manuring of newly cultivated land. *Valt. Maatalousk. julk.* 57, pp. 48. *Bied. Zbl.* 6A, 1935 (118). B.C.A. 55 (384).
- 631.445.1 : 631.811.4** — Brüne, F.; Arnd, T. The acidity and lime requirement of moor soils. *ForschDienst.* 1, 1936 (742-745). [G.]
- 631.445.1 : 631.821.1** Brüne, F.; Arnd, T. Results of pot experiments on moorland and sandy heath soils. *Jahrb. Moork.* 23, 1935 (3-13). C.M.R. No. 11 (8).
- 631.445.1 : 631.822** Vesikivi, A. Experimental results of the Finnish Peat Culture Society (Leteensuo) in 1934. *Finska Mossk-Fören. Arb.* 39, 1935 (59-79). *Jahrb. Moork.* 1936 (113). [Fisw.]
- 631.445.1 : 631.841.5** Brüne, F.; Igel, H. Calcium cyanamide for moorland soils. *Jahrb. Moork.* 23, 1935 (14-27). C.M.R. No. 11 (8).
- 631.445.1 : 631.85** Brüne, F. Results of comparative fertilizer tests with basic slag and Algiers phosphate on 80-year sanded high moor soil. *Phosphorsäure* 5, 1935 (537-550).
- 631.445.1 : 631.85** Neller, J. R. Phosphorus content and buffer capacity of plant sap as related to the physiological effect of phosphorus fertilizers in fibrous low-moor peat. *J. Agric. Res.* 51, 1935 (287-300).
- 631.445.1 : 631.85** Niklas, H.; Schropp, W.; Scharrer, K. The effect of different phosphate fertilizers on low moor soil. *Landw. Jahrb.* 81, 1935 (381-392). [G.]
- 631.445.1 : 631.85** Turnas, P. A.; Karetnikova, A. F. Experimental results on the chemization of marsh soils in the far north. *Khim. Sotsial. Zoolid.* No. 6, 1935 (15-22). C.A. 30 (1163).
- 631.445.1 : 631.85** Brüne, F. The phosphate fertilization of moor soils. *Phosphorsäure* 6, 1937 (22-35). C.A. 31 (7575). [G.]
- 631.445.11** — Polyntseva, O. A. Tundra soils. *Exped. Acad. Sci. U.S.S.R.* 1934-1935 (49-57). *Pedology* 1937 (290).
- 631.445.11** — Stoltenberg, H. The permanently frozen soils. *Geol. Rdsch.* 26, 1935 (412-423). [G.]
- 631.445.11** — Polyntseva, O. A.; Ivanova, E. N. Complexes of the variegated tundra of the Khibinsk massif and their evolution in relation to the evolution of the soil and vegetation. *Trans. Dokuchaev Inst.* 13, 1936 (213-265). [R.]
- 631.445.11 : 551.41** — Gorodkov, B. N. The main lines of development of the microrelief in the extreme North and its relation to the soils and vegetation. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (521-525).
- 631.445.11 : 581.5** Mirimanian, Kh. P. Characterization of the perpetual frozen layer on the Agmagan plateau in S.S.R. Armenia. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (526-534). [R.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.445.11 : 631.461.3**—Tsypplénkin, E. I.; Zhilin, D. G. Nitrification in tundra soils. *Khim. Selsul. Zemled.* No. 5, 1936 (59-63). [R.]
- 631.445.12**—Stiny, J. Physical data for highland soils. *Soil Res.* 4, 1935 (356-362). [G.]
- 631.445.13 : 631.417** Waksman, S. A. Chemical composition of a heather-peat profile. *J. Ecol.* 25, 1937 (113-115)
- 631.445.14 : 581.5** Géze, B. Subterranean karst soils and their utilization by plants. *Bull. Assoc. Franç. Ét. Sol* 3, 1937 (11-15). [F.]
- 631.445.14 : 631.416.2** Lundblad, K. Soil investigations on Svartökärr. *Stenska Mosskören. Tidskr.* 49, 1935 (142-166). [Sw.g.]
- 631.445.2**—Joffe, J. S.; Watson, C. W. Soil profile studies. V. Mature podzols. *Soil Sci.* 35, 1933 (313-331). B.C.A. 52 (482).
- 631.445.2**—Shavrygin, P. I. Degradation and regradation of grey forest soils. *Trans. Dokuchaev Inst.* 10, 1934 (47-80). B.C.A. 54 (197).
- 631.445.2** Aaltonen, V. T. The stratigraphy of the podzol profile. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (364-368). [G.]
- 631.445.2** Mattson, S.; Nilsson, I. The podzol complex. *Nord. Jordbruk.* 5-7, 1935 (380-396). [Sw.]
- 631.445.2** Rode, A. A. Degree of podzolization. *Dokuchaev Inst. Studies Genesis Geography Soils* 1935 (55-70). *Trans. Dokuchaev Soil Inst.* 13, 1936 (113-161). B.C.A. 54 (1106). [R.]
- 631.445.2** Stremme, H. The subdivision of world groups with particular reference to podzolized soils. *Trans. 3rd Int. Cong. Soil Sci.* 2, 1935 (143-150). [G.]
- 631.445.2** Zavallishin, A. A. Processes of removal and accumulation in podzolized soils of the forest-steppe region. *Dokuchaev Inst. Studies Genesis Geography Soils* 1935 (71-126). B.C.A. 54 (1106).
- 631.445.2**—Bystrov, S. V. Notes on the podzolization process. I. The oxygen content of podzolized and gley-soil water. II. The composition and formation of pans in podzolized soils. *Trans. Dokuchaev Inst.* 13, 1936 (163-211). [R.]
- 631.445.2**—Lundblad, K. Studies on podzols and brown forest soils. II. *Soil Sci.* 41, 1936 (295-313).
- 631.445.2** Lundblad, K. Studies on podzols and brown forest soils. III. *Soil Sci.* 41, 1936 (383-394).
- 631.445.2** Dixon, J. K.; Harris, A. C. Chemical studies on some leached soils. *N.Z. J. Sci. Tech.* 19, 1937 (173-179).
- 631.445.2 : 551.58**—Beijerinck, W. Humus, ortstein and bleich sand as products of opposite kinds of climate. *Proc. Acad. Sci. Amsterdam* 37, 1934, No. 2 (93-99). [F.S.R. 72 (297)]
- 631.445.2 : 551.58** Kovda, V. A. Geography of the podzol stage of soil formation. *Trans. Dokuchaev Inst.* 10, No. 2, 1934 (1-30). B.C.A. 1934 (1329). [R.]
- 631.445.2 : 581.144.2**—Slugin, P. T. Distribution of the root system of agricultural plants along the horizons of podzol soils of the Maritime Province of the Far East. *Vest. Dal'n. V. Fil. Akad. Nauk* No. 20, 1936 (173-177). [R.]

# FERTILIZERS AND GENERAL AGRONOMY

- 631.445.2 : 631.413.41/2**—Mattson, S. The pH and base saturation of the podzol profile. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (67-70).
- 631.445.2 : 631.413.41**—Kedrov-Zikhman, O. K. The composition of absorbed cations of podzolized soil and crop plants. *Trudy Mosk. Akad. Timiriazeva* 1, 1935 (63-68). *Pedology* 1935 (912). [R.]
- 631.445.2 : 631.416**—Rode, A. A. The chemical composition of the mechanical fractions of some podzol and bog soils. *Trans. Dokuchaev Soil Inst.* 8, No. 3, 1933. P.I.S. 8 (142).
- 631.445.2 : 631.416**—Shewan, J. M. Analysis of mineral constituents in certain forest soils in north-east Scotland. *Forestry* 10, 1936 (149-152).
- 631.445.2 : 631.416.2**—Joret, G.; Malterre, H. Migration of phosphoric acid during the process of podzolization. *C.R. Acad. Agric.* 21, 1935 (943-946). [F.]
- 631.445.2 : 631.434**—Radchenko, A. G.; Korneeva, N. P. The structure of podzolized soils and its significance for physico-chemical and chemico-biological processes. *Sborn. Rab. VNIIS*, 1936 410-430. [R.]
- 631.445.2 : 631.46**—Gray, P. H. H.; Atkinson, H. J. Microbiological studies of Appalachian upland podzol soils. I. Effects of physical and chemical treatments. *Canad. J. Res.* 13C, 1935 (115-126).
- 631.445.2 : 631.46**—Gray, P. H. H.; Atkinson, H. J. Microbiological studies of Appalachian podzol soils. II. Seasonal changes in microbial activity. *Canad. J. Res.* 13C, 1935 (358-366).
- 631.445.2 : 631.46**—Gray, P. H. H.; Taylor, C. B. A microbiological study of podzol soil profiles. II. Laurentian soils. *Canad. J. Res.* 13C, 1935 (251-255).
- 631.445.2 : 631.461**—Gray, P. H. H. A microbiological study of podzol soil profiles. III. Bacteria found in separate horizons. *Canad. J. Res.* 13C, 1935 (256-262).
- 631.445.2 : 631.461**—Gray, P. H. H. Studies on the microbiology of podzol soils in Quebec. *Soils Group Pap. C.S.T.A.* abs. in *Sci. Agric.* 17, 1937 (462).
- 631.445.2 : 631.472**—Joffe, J. S. Criteria of the horizons of the soils in the podzol zone. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (329-332).
- 631.445.2 : 631.48**—Harlow, L. C. The clay fraction of Annapolis Valley soils. *Sci. Agric.* 17, 1937 (325-328).
- 631.445.2 : 631.48**—Kachinskaja, E. S. The rapidity of the soil-forming process in the podzol zone. *Pedology* No. 7, 1937 (721-728). [R.g.]
- 631.445.2 : 631.48**—Rode, A. A. The characteristics of the podzol formation process. *Pedology* No. 6, 1937 (849-862). [R.g.]
- 631.445.2 : 631.51**—Demolon, A. Effect of cultivation on the podzolic evolution of soils. *Chim. Indust. 14th Cong. Paris* 1934, pp. 3. C.A. 29 (5964).
- 631.445.2 : 631.51**—Ganin, A. Increasing the cultivation depth in the podzol zone. *Sotsial. Rekonstr. S.-Kh.* No. 12, 1934 (149-155). [R.]
- 631.445.2 : 631.51**—Chizhevsky, M. G.; Bogomolov, V. Z. Methods of deepening the arable layer on turf podzol soils. 1. The

# BIBLIOGRAPHY OF SOIL SCIENCE

significance of a deep plough layer and the causes of the infertility of the podzol horizon. *Khim. Sotsial. Zemled.* No. 1, 1935 (5-11). [R.]

**631.445.2 : 631.51**—Kusnetsova, N. A. The formation of a deep arable layer on podzol soils. *Khim. Sotsial. Zemled.* Nos. 11-12, 1935 (136-152). [R.g.]

**631.445.2 : 631.51**—Mattson, S.; Gustafsson, Y. The chemical characteristics of soil profiles. 11. The mutual interactions of podzolic materials. *LantbruksHögsk. Ann.* 2, 1935, pp. 30.

**631.445.2 : 631.51**—Gladilovich, B. R.; Lebedeva, A. F. Influence of cultural tillage on the process of soil formation. *Pedology* No. 6, 1936 (859-869). [R.e.]

**631.445.2 : 631.51**—Lupinovich, I. S.; Kurchatov, P. A.; Zakharov, S. S. Deepening of the arable horizon in the non-chernozem region as a factor of increased yields. *Trudy Belorussk. S.-Kh. Inst.* 5, 1936 (1-59). [R.e.]

**631.445.2 : 631.51**—Nikolaev, N. F. The effect of the depth of ploughing on weeds on podzol soils. *Trudy Belorussk. S.-Kh. Inst.* 5, 1936 (177-228). [R.g.]

**631.445.2 : 631.51**—Tatarinov, S. F. Changes which occur in virgin podzol soils when they are brought into cultivation. *Khim. Sotsial. Zemled.* Nos. 7-8, 1936 (160-165). [R.]

**631.445.2 : 631.512**—Yasinskaya, L. L. The deepening of the arable layer in the non-chernozem region. *Khim. Sotsial. Zemled.* No. 3, 1937 (69-84). [R.]

**631.445.2 : 631.61**—Mafan, B. Amelioration of hardpan soils. *Leuvenk. Práce* 13, 1934 (208-217). *Biol. Abs.* 9 (172).

**631.445.2 : 631.61**—Hasselbalch, K. A. Podzolized soil and its reclamation. *Nord. JordbrForsh.* 5-7, 1935 (301-306). [Da.]

**631.445.2 : 631.81**—Egorov, V. E. Bringing a virgin forest podzol into cultivation by the use of fertilizers. *Khim. Sotsial. Zemled.* No. 1, 1935 (18-28). [R.]

**631.445.2 : 631.81**—Kirsanov, A. T. The role of phosphates and lime on podzol soils with different concentrations of H and Fe. *Pedology* No. 4, 1935 (493-500). [R.e.]

**631.445.2 : 631.81**—Wyatt, F. A. Fertilizers for the black and grey soils of Central Alberta. *Sci. Agric.* 16, 1936 (238-240).

**631.445.2 : 631.81**—Loshenko, V. G. The degree of fertility of the different horizons of turl-podzol soils. *Khim. Sotsial. Zemled.* No. 3, 1937 (85-89). [R.]

**631.445.2 : 631.822**—Godlin, M. M.; Stotsky, A. I. Experimental work on "boessitation" of podzolic soils. *Trudy Inst. Agrogrunt. Khim.* 1, 1936 (74-81). [U.r.e.]

**631.445.2 : 631.822**—Newton, J. D. The fertilizing value of sulphate in natural "alkali" for grey wooded soils. *Sci. Agric.* 16, 1936 (241-243).

**631.445.2 : 631.83**—Titorenko, K. P. Absorption of potash by podzolized soils. *Trudy Gdovsk. Inst. V.d.b. Leningr. Lab.* No. 36, 1935 (110-136). [R.]

**631.445.2 : 631.85**—Arkhangel'sky, N. Phosphate fertilizers and secondary podzol soils of the Tartar Republic. *Sotsial. Khoz. Tatarskaya* No. 7-8, 1934 (37-44). *Pedology* 1937 (128). [R.g.]

**631.445.2 : 633.2.03**—Tiurin, I. V. An influence of meadow vegetation on podzol soils. *Trans. Int. Soc. Soil Sci. Soviet Sect. 5th Comm.* 1935 (16-28).

# FERTILIZERS AND GENERAL AGRONOMY

- 631.445.3—Mitchell, R. L. ; Muir, A.** The brown earth in Scotland : its relation to continental types. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (322-323).
- 631.445.3—Lundblad, K.** Studies on podzols and brown forest soils. II. *Soil Sci.* 41, 1936 (295-313).
- 631.445.3—Lundblad, K.** Studies on podzols and brown forest soils. III. *Soil Sci.* 41, 1936 (383-394).
- 631.445.3—Mikhailovskaia, O. N.** Genesis of the Transcaucasian brown forest soils. *Soils of the Soviet Subtropics* 1936 (109-204). *Pedology* 1937 (300).
- 631.445.4—Krause, P. G. ; Utescher, K.** A new chernozem occurrence in East Prussia and the characterization of chernozem and peat soil. *Jahrb. Preuss. Geol. Landesanst.* 55, 1934 (526). P.L.S. 10 (122). [G.]
- 631.445.4—Gemmerling, V. V.** The genesis of the soils belonging to the steppe soil type. *Trans. Int. Soc. Soil Sci. Soviet Sect. 5th Comm.* 1935 (10-15). [G.]
- 631.445.4—Ionescu-Sisesti, G.** Contributions to the study of the fertility of chernozems. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (261-264). [R.]
- 631.445.4—Gemmerling, V. V.** The genesis of soils of the steppe type of soil formation. *Pedology* No. 4, 1936 (530-539). [R.]
- 631.445.4 : 546.22—Zel'ko, A. A.** The effect of certain forms of sulphur as fertilizers on southern chernozem. *Shorn. Rab. Azovo-Chernomorsk. S.-Kh. Inst.* 3, 1934 (115-122).
- 631.445.4 : 546.22—Pochernikova, T. A.** Acid manuring of chernozem. *Nauch. Phodor. Michurnsk.* 1, 1936 (28-33). *Forsch.Dienst.* 2 (10). [R.]
- 631.445.4 : 546.331.31—Cheliadinov, G. I.** Movement of NaCl in soil and its effect as fertilizer on southern chernozem. *Shorn. Rab. Azovo-Chernomorsk. S.-Kh. Inst.* 3, 1934 (135-147). *Pedology* 1937 (131). [R.]
- 631.445.4 : 581.144.2—Yeager, A. F.** Root systems of certain trees and shrubs grown on prairie soils. *J. Agric. Res.* 51, 1935 (1085-1092).
- 631.445.4 : 631.415.1—Mishustin, D.** Acidification of southern chernozems. *Shorn. Rab. Azovo-Chernomorsk. S.-Kh. Inst.* 3, 1934 (123-134). *Pedology* 1937 (131). [R.]
- 631.445.4 : 631.415.1—Seniushov, A.** Acidification as a factor activating chernozem fertility. *Trans. Dokuchaev Inst.* 14, 1937 (99-128). [R.]
- 631.445.4 : 631.416—Oloviashnikov, G. I.** Distribution of  $\text{CaCO}_3$  and  $\text{MgCO}_3$ , silica and sesquioxides in the mechanical fractions of Central Asian chernozems and certain peculiarities of soil carbonates. *Pedology* No. 7, 1937 (710-720). [R.]
- 631.445.4 : 631.48—Gvozdetzky, V. M.** Di-phase afforestation of the forest-steppe zones of Eastern Europe. *Shorn. Rab. VNTS.* 1936 (77-90). [R.]
- 631.445.4 : 631.48—Nikiforoff, C. C.** Some general aspects of soil formation. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (333-342).
- 631.445.4 : 631.51—Lazarev, A. A.** The influence of agricultural cultivation on the properties of the chernozems of the forest steppe region. *Acad. Sci. U.S.S.R. SOPS* 1936, pp. 70. [R.]



# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.445.5—Novikov, V. A.** Physical characters of dark serozems. *Reclam. Deserts Cent. Asia* 1934 (195-206). [R.]
- 631.445.5:594—Sandford, K. S.** Observations on the distribution of land and freshwater mollusca in the Southern Libyan desert. *Quart. J. Geol. Soc.* 92, 1936 (201-220).
- 631.445.5:631.411.1—Sobolev, S? S.** Results of a study of the natural conditions of sands in the lower Dnieper region. *Trans. Int. Soc. Soil Sci. Soviet Sect. 5th Comm.* 1935 (107-124). [P.]
- 631.445.5:631.414—Brown, I. C.; Byers, H. G.** The chemical and physical properties of dry land soils and of their colloids. *U.S.D.A. Tech. Bull.* 502, 1935, pp. 56.
- 631.445.5:631.414—Brown, I. C.; Byers, H. G.** Properties of colloids from dry land soils. *Amer. Soil Surv. Bull.* 17, 1936 (13-19).
- 631.445.5:631.416.13—Snow, O. W.; Greene, H.** The nitrate profile in an arid soil. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (360-363).
- 631.445.5:631.461.1.3—Oberholzer, P. C. J.** The decomposition of organic matter in relation to soil fertility in arid and semi-arid regions. *Soil Sci.* 42, 1936 (359-379).
- 631.445.5:631.581—Orlovsky, N. V.** The problem of leys in dry regions. *Khm. Sotsial. Zernid.* No. 8, 1935 (48-59). [R.]
- 631.445.5:631.61—Mirimanian, K. P.** Reclamation of the Sarikarabai steppe in connection with the Sevan project. *Trans. Int. Soc. Soil Sci. Soviet Sect. 5th Comm.* 1935 (125-130).
- 631.445.5:631.81—Firbas, H.** The application of animal fertilizers in arid climates. *Pflanzenbau* 9, 1933 (436-444). *Bied. Zbl.* 64 (87). G
- 631.445.5:631.81—Sekera, F., et al.** The fertilizing of oil in a dry climate. *Zschr. Pflanz. Dung.* 38, 1935 (3-75). G
- 631.445.5:631.81—Sokolov, A.** The problem of the application of concentrated fertilizers in the dry zone. *Mimeo Udob.* No. 1, 1935 (72-74).
- 631.445.51—Prasolov, L. I.; Antipov-Karataev, I. N.; Sedletsky, I. D.** The chestnut soils of dry steppes. *Pedology* No. 6, 1937 (863-882). [R.]
- 631.445.51:631.413.41—Shavrygin, P. I.** Physical properties and exchangeable bases of chestnut soils. *Doklady Inst. Studies Genesis and Geography of Soils*, 1935 (213-223). [R.] B.C.A. 54 (1107).
- 631.445.51:631.43—Letunov, P. A.; Dolgov, S. I.; Galkin, I. V.** The water properties and agromeliorative characterization of Transvolga soils. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (299-329). [R.]
- 631.445.51:631.46—Zakharova, G. S.** A characterization of the microbiological processes of the light chestnut soils at the Valuis-kava Agr. Expt. Station. *Trudy Nauch. Inst. Udob.* No. 108, 1933 (171-182). C.A. 29 (1556).
- 631.445.51:631.87—Langeld, F. K.; Mochul'sky, S. K.** The effect of organic fertilizers on the increase of fertility in chestnut soils. *Sotsial. Zern. Khov.* No. 5, 1937 (58-64). [R.]
- 631.445.52.3—Polynov, B. B.** Processes of salinization and desalinization and the salt profile of soils. *Trudy Komissii Irrigatsii* 1, 1933. C.A. 28 (3159).

## FERTILIZERS AND GENERAL AGRONOMY

- 631.445.52/3** -Fedorov, B.; Malahov, V.; Fedorova, E. Saline lands of Ferghana and their improvements. *Sredn'az Nauch. Inst. Khlopkov* 1934, pp. 136. *Herb. Abs.* 4 (237).
- 631.445.52/3** -Aldinjan, R. Kh. The chemical properties of solonchak and solonetz soils and chemical amelioration methods. *Pedology* No. 3, 1935 (392-404). [R.]
- 631.445.52/3** -Milev, D. P. Salt soils in the region of Plovdiv. *Ann. Univ. Sofia V. Fac. Agron. Sylvicult.* 13, 1935 (43-69). C.A. 30 (3563).
- 631.445.52/3** -Eremin, G. G. Solonets-solonchak complexes in the depression of Bolskhaia Maituga, Kuibyshev region. *Pedology* No. 5, 1936 (732-743). [R.]
- 631.445.52/3** -Grigor'ev, G. I. Sodium solonetses and sodium solonets-solonchaks in the Transvolga and their amelioration. *Khim. Sotsial. Zemel.* No. 10, 1936, (51-62). [R.]
- 631.445.52/3** -Kaniyets, I. I.; Bas'ko, N. D. Genetic characteristics of solonchaks, solonetses and solods of the cis-Dneiper region. *Sborn. Rab. VNIIS*, 1936 (54-76). [R.]
- 631.445.52/3** -Makarov, N. A. Development of solonetsous and salinized soils. *Trudy S.-Kh. Akad. Timiriazeva* 1, No. 3, 1936 (3-40). [R.]
- 631.445.52/3** -Nevros, K. I.; Zvorykin, I. A. The variety of solonets red soils in the vicinity of the village of Marcopoulo, Attica. *Soil Sci.* 43, 1937 (239-246).
- 631.445.52/3** -Orlovsky, N. V. The utilization and improvement of solonets and solonchak soils of Western Siberia. *Khim. Sotsial. Zemel.* No. 6, 1937 (38-59). [R.]
- 631.445.52** -Gerasimov, I. P.; Ivanova, E. N. Process of continental salt accumulations in soils, rocks, underground water and lakes in W Siberia. *Trans. Dokuchaev Inst.* 9, 1934 (101-135). B.C.A. 54 (164).
- 631.445.52** -Rozanov, A. N. Data concerning the salt soils of Central Asia. *Reclam. Deserts Cent. Asia* 1934 (146-194). [R.]
- 631.445.52** -Kovda, V. A.; Seliakov, S. N. Saltpetre solonchak in Middle-Asia. *Dokuchaev Inst. Studies Genesis and Geography of Soils*, 1935 (127-138). B.C.A. 54 (1106). G.
- 631.445.52** -Voskresensky, M. N. The evolution of the salt profile of valley soils in the desert part of Middle Asia. *Pedology* No. 2, 1935 (259-268). [R.]
- 631.445.52** -Zimnitsky, V. S. The solonchak groups of the south-eastern (Trans-Balkhash) districts of Middle Asia. *Pedology* No. 4, 1937 (560-566). [R.]
- 631.445.52:581.5** -Abolin, R.; Chechina, A. Solonchak vegetation, its utilization and amelioration. *Problems of Plant Utilization of Deserts, Leningrad*, 2, 1934 (9-32). *Pedology* 1937 (303).
- 631.445.52:581.5** -Gevelson, T. A. Role of vegetation in the process of continental salt accumulation. *Trans. Dokuchaev Inst.* 9, 1934 (137-159). B.C.A. 54 (164).
- 631.445.52:581.5** -Ganiatsas, C. Investigations on the vegetation on the saline soils of Soloniki. *Bot. Dent. Bot. Ges.* 54, 1936 (430-444). G.
- 631.445.52:631.413.4** -Kovda, V. A. Formation of secondary calcium carbonate in soils. *Trans. Dokuchaev Inst.* 9, 1934 (247-253). B.C.A. 54 (163).

## BIBLIOGRAPHY OF SOIL SCIENCE

- 631.445.52:631.413.4**—Tziflidis, I. E.; Ivanov, A. E. Data on the study of exchange reactions in carbonate soils salinized with chlorides and sulphates. *Trudy Gdoviz Inst. Udob.* No. 34, 1934 (26-36). C.A. 28 (7403).
- 631.445.52:631.416.13**—Andrianov, K. S. The nitrate solonchaks of the Ishtar region of the Tadzhik S.S.R. *Khim. Sotsial. Zemel.* No. 10, 1936 (63-67). R.
- 631.445.52:631.461.3**—Genkel, P. A.; Danini, E. M. Nitrication in solonchaks. *Mikrobiologia* 5, 1936 (99-110). R.e.]
- 631.445.52:631.67**—Polynov, B. B.; Kovda, V. A.; Lebedev, N. N. The Caspian plain as an irrigation project. *Trudy Komissii Irrigatsii* No. 1, 1933 (28-64). R.
- 631.445.53.4**—Birko, P. V. Physico-chemical indexes of solonets solodization in the south of the Ukrainian S.S.R. *Trudy Inst. Agrokult. Khim.* 2, 1936 (114-115). U.r.e.]
- 631.445.53**—Sushko, S. Y. Taksyr: genesis, chemical properties and method of improving. *Trudy Gdoviz Inst. Udob.* Leningr. Lab. No. 34, 1934 (37-56). C.A. 28 (7392).
- 631.445.53**—Kelley, W. P.; Shaw, C. F. The meaning of the term "solonetz". *Amer. Soil Surv. Bull.* 16, 1935 (1-3). *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (330-334).
- 631.445.53**—Kovda, V. A. Types of alkali soils (solonets). *C.R. Acad. Sci. (U.S.S.R.)* 3, n.s., 1935 (367-369). G.
- 631.445.53**—Kovda, V. A.; Bystrov, S. V. The nature of the alkalinity of solonets (alkali soils). *Trans. Int. Soc. Soil Sci. Section 5th Comm.* 1935 (131-152). G.
- 631.445.53**—Zonn, S. V. The taksyr of Turkmenistan and their reclamation. *Trudy Turkmen. Kont.* 2, 1935 (364-371). *Pedology* 1936 (661).
- 631.445.53**—Kovda, V. A. Alkali soil types (solonets). *Proc. 3rd Int. Cong. Soil Sci.* 3, 1936 (99-102). C.A. 30 (2298). B.C.A. 55 (113). G.
- 631.445.53**—Thorpe, J.; Hseung, Y. The nature of a young solonetz from Changpeishien, Chahar, North China. *Soil Bull. Peking*, No. 15, 1936 (5-17). C.A. 31 (7157). E.
- 631.445.53**—Nikiforoff, C. G. The solonetz-like soils in Southern California. *J. Amer. Soc. Agron.* 29, 1937 (781-796).
- 631.445.53:581.5**—Kellogg, C. E. Morphology and genesis of the solonetz soils of western North Dakota. *Soil Sci.* 38, 1934 (483-500).
- 631.445.53:581.5**—Hanson, H. C.; Whitman, W. Plant succession on solonetz soils in western North Dakota. *Ecology* 18, 1937 (516-522).
- 631.445.53:631.414.1**—Pavlov, E. F. Solonizing soil masses by the capillary rise of field solutions. *Gorki Agro. Inst. Rept.* 2, 1932 (33). B.C.A. 55 (34). C.A. 30 (5705).
- 631.445.53:631.416.846**—Pankov, A. M.; Shavrygin, P. I. Adsorption complex of soils of the Premanych region. *Trans. Dzhukhaev Inst.* 9, 1934 (205-235). B.C.A. 54 (164).
- 631.445.53:631.416.846**—Ellis, J. H.; Caldwell, O. G. Magnesium clay "solonetz". *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (348-350).
- 631.445.53:631.416.846**—Rost, G. O. Characteristics of some morphological solonetz soils of Minnesota. *J. Amer. Soc. Agron.* 28, 1936 (92-105).

# FERTILIZERS AND GENERAL AGRONOMY

**631.445.53:631.454**—Breazeale, J. F.; McGeorge, W. T. Nutritional disorders in alkaline soils as caused by deficiency of carbon dioxide. *Ariz. Agric. Expt. Sta. Tech. Bull.* 41, 1932 (113-153).

**631.445.53:631.459**—Murphy, H. F.; Daniel, H. A. Some chemical and physical properties of normal and solonetz soils and their relation to erosion. *Soil Sci.* 39, 1935 (453-461).

**631.445.53:631.46**—Fehér, D.; Bokor, R. Some important biological properties of solonets-like szik (alkali) soils of Hortobágy with regard to their reclamation. *Math. Naturw. Anz. Ungar. Akad. Wiss.* 38, 1931 (80-134). C.A. 29 (1918).

**631.445.53:631.46**—Genkel, P. A.; Danini, E. M. Microbiological characteristics of solonets soils. *Trudy Biol. Inst. Perm.* 7, [1933?], No. 1-2 (95-101). *Pedology* 1937 (281).

**631.445.53:631.461.51**—Sushkina, N. N. Soil microfloral changes during the desalinizing process of a carbonate solonets. *Trans. Dokuchaev Inst. (Gedroitz Memorial Issue)* 9, 1934 (189-204). [R.e.]

**631.445.53:631.48**—Antipov-Karataev, I. N.; Sedletsy, I. D. The physico-chemical processes in the formation of solonets. *Pedology* No. 6, 1937 (881-907). [R.e.]

**631.445.53:631.58**—Romashev, P. I. The agronomic properties of solonets of the chestnut brown soil zone. *Khim. Sotsial. Zemled.* No. 2-3, 1936 (117-127). C.A. 30 (7259). [R.e.]

**631.445.53:631.613**—Murphy, H. F. Solonetz B horizon mixtures for terrace building. *Proc. Assoc. S. Agric. Workers 34th, 35th, and 36th Ann. Conv.* 1933-35 (481). C.A. 30 (2677).

**631.445.53:631.67**—Rozov, L. P. On the changes in solonets soils when irrigated and washed out. *Pedology* No. 2, 1934 (216-235). [R.e.]

**631.445.53:631.67**—Neugebauer, V. The reclaiming effect of irrigation on alkalinized soils. *Ztschr. Pflanz. Düng.* 37, 1935 (192-196). [G.]

**631.445.53:631.67**—Orlovsky, N. V. The effect of irrigation on solonets soils. *Pedology* No. 3, 1935 (361-370). [R.]

**631.445.53:631.67**—Ussov, N. I. Study of the influence of the system of irrigation, periods and amount of water on the salt regime of soils in the northern part of the Caspian lowland. *Uchen. Zap. Saratov. Univ.* 13, 1935, pp. 35. *Pedology* 1936 (946).

**631.445.53:631.81**—Lambin, A. Z. Comparative effect of different organic and mineral materials on the changes in the physico-chemical characteristics of the B horizon of a columnar solonets and the increase in yield of winter wheat. *Trudy Omsk. Inst. S.-Kh.* 1, No. 3, 1935 (53-77). [R.e.]

**631.445.53:634.953.6**—Granitov, I. I. Natural improvement of "takyr". *Reclam. Deserts Cent. Asia* 1934 (232-236). *Herb. Abs.* 6 (50).

**631.445.54**—Akimtzhev, V. V. Soil solodization in Eastern Trans-Caucasia. *Pedology* No. 1, 1937 (33-64). [R.e.]

**631.445.54:631.461.3**—Butyllin, E. I. Nitrification processes in solods. *Mikrobiologia* 5, 1936 (111-115). [R.e.]

**631.445.55**—Orlov, M. A. Changes in soil-forming processes in Central Asiatic deserts. *Reclam. Deserts Cent. Asia*, 1934 (138-145). [R.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.445.55: Nikiiforoff, C. G.** General trends of the desert type of soil formation. *Soil Sci.* 43, 1937 (105-125).
- 631.445.55: 581.5 Granitov, I. I.** Interrelations in the ephemeral vegetation of deserts. *Reclam. Deserts Centr. Asia*, 1934 (134-137). *Herb. Abs.* 6 (51). [R.]
- 631.445.55: 581.5 -Gursky, A. V.** Ecological features of the loess semi-deserts of Western Kopet-Dag. *Soviet Subtrop.* No. 3, 1934 (50-67). *Pedology* 1936 (680).
- 631.445.55: 581.5 -Korovin, E. P.** Ecological study of desert types of Central Asia and Kazakstan with reference to their reclamation. *Reclam. Deserts Centr. Asia* 1934 (5-19). *Herb. Abs.* 6 (52). [R.]
- 631.445.55: 581.5 Shreve, F.** The desert and its life. *Carnegie Inst. News Serv. Bull. School Edition* 3, 1934 (115-120).
- 631.445.55: 631.434 -Baver, L.D.; Harper, W. G.** The aggregation of desert soils. *Amer. Soil Surv. Bull.* 16, 1935 (54).
- 631.445.6 Freise, F. W.** The "terra rossa" in São Paulo, Brazil. *Econ. Geol.* 29, 1934 (280-293).
- 631.445.6 -Blanck, E.; Oldershausen, E. v.** Recent and fossil red earth (terra rossa) formation, particularly in the southern region of Frankenthal in the Altmühlthal mountains. *Chem. Erde* 10, 1935 (1-66). [G.]
- 631.445.6 Joffe, J. S.** "Terra rossa" and red loams and their relation to other zonal soils. *Amer. Soil Surv. Bull.* 16, 1935 (60-65).
- 631.445.6 Reifenberg, A.** Soil formation in the Mediterranean. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (306-310).
- 631.445.6 Bordas, J.** Contribution to the study of the Mediterranean soils of France. *Bull. Assoc. Franç. Et. Sol* 2, 1936 (5-24). [F.]
- 631.445.6 -Isukuraga, K.; Watanabe, K.** Studies on the terra rossa of Kuantungchou, South Manchuria. *J. Sci. Soil Japan* 10, 1936 (76-93). [J.]
- 631.445.6 Nevros, K. I.; Zvorykin, I. A.** Investigations of red soils of Attica, Greece. *Soil Sci.* 41, 1936 (397-412).
- 631.445.6 Puffeles, M.** Some data on the Mediterranean red soils. *Soil Sci.* 44, 1937 (167-174).
- 631.445.6: 631.413.42 Goletian, G. I.** The nature of the acidity and the role of organic matter in red earths. *Pedology* No. 7, 1937 (695-709).
- 631.445.6: 631.415.1 Zolotareva, E. S.** A study of the acidity of red earth-podzol soils in relation to liming. *Khm. Sotsial. Zemled.* Nos. 11-12, 1935 (16-27). [R.g.]
- 631.445.6: 631.416 Tiulin, A. F.** Availability of plant nutrients in red soils. *Soviet Subtrop.* No. 8, 1936 (8-13). [R.e.]
- 631.445.6: 631.417 Tiulin, A. F.** The role of organic matter in increasing the fertility of red soils. *Soviet Subtrop.* Jan. 1936 (9-15). [R.e.]
- 631.445.6: 631.432.2 Darasella, M. K.** The water regime of red soils. *Soviet Subtrop.* No. 2, 1937 (14-23). [R.e.]
- 631.445.6: 631.459 Darasella, M. K.** Physical properties of red soils in relation to erosion. *Soviet Subtrop.* No. 12, 1935 (27-34). *Pedology* 1937 (83).

# FERTILIZERS AND GENERAL AGRONOMY

**631.445.6 : 631.46**—Kuznetsov, S. I. A microbiological characteristic of the soils in some districts of Transcaucasia. *Trudy Nauch. Inst. Udob.* No. 108, 1933 (33-57). C.A. 29 (1556).

**631.445.6 : 631.46**—Schvezova, O. Some peculiarities in the microbiology of red earths. *Arb. Inst. Landw. Mikrobiol.* 4, 1935, No. 3. *Zbl. Bakt.* 94 (282). [R.]

**631.445.6 : 631.461**—Obratsova, A. A. Rhizosphere organisms in Batum red earths. *Bull. Acad. Sci. (U.S.S.R.) (Cl. Sci. Math.) Biol. Ser.* No. 1, 1936 (255-275). [R.e.]

**631.445.6 : 631.483**—Pelišek, J. Chemical behaviour of calcium and iron concretions from red soils of Kunstat in Moravia. *Shorn. Čsl. Akad. Zeměd.* 11, 1936 (419-426). C.A. 31 (1932). [Cz.g.]

**631.445.6 : 631.51**—Akulova, T. A. A study of the physical properties of red earth soils. *Pedology* No. 1, 1936 (79-98). [R.]

**631.445.6 : 631.85**—Ulikov, I. P. Phosphate treatment of red soils. *Khim. Sotsial. Zemled.* Nos. 2-3, 1936 (91-97). [R.e.]

**631.445.7**—Hardy, F. Some aspects of tropical soils. *Trans. 3rd Int. Cong. Soil Sci.* 2, 1935 (150-163).

**631.445.7**—Vilensky, D. G. Genesis of subtropical and tropical soils. *Soviet. Subtrop.* No. 6, 1935 (80-84). [R.]

**631.445.7**—Raychaudhuri, S. On the variations in physical and chemical properties of neighbouring tropical soils. *Thesis, London*, July 1936, pp. 186 (mimeo).

**631.445.7**—Camargo, T. de; Vageler, P. Problems of tropical and subtropical soil science. *Bodenk. PflErnähr.* 4, 1937 (137-161). B.C.A. 56 (1095). [G.]

**631.445.7**—Hackemann, F. Investigations of soils of warmer countries. With special reference to German East Africa (Tanganyika Territory). *Tropenpflanzer* 40, 1937 (154-166). [G.]

**631.445.7 : 581.5**—Erlanson, E. W. Plant colonization on two new tropical islands. *J. Indian Bot. Soc.* 15, 1936 (193-213). C.A. 31 (198).

**631.445.7 : 631.414.2**—Albareda, J. M. The molecular ratio  $\text{SiO}_2/\text{K}_2\text{O}_2$  of clays in the characterization of soils. *An. Soc. Españ. Fis. Quim.* 33, 1935 (45-52). [Sp.]

**631.445.7 : 631.415.1**—Doyle, H. C. Studies in tropical soils. Increase of acidity with depth. *J. Agric. Sci.* 25, 1935 (192-197).

**631.445.7 : 631.416.1**—Dhar, N. R.; Mukherji, S. K. Available nitrogen in tropical soils. *J. Indian Chem. Soc.* 13, 1936 (23-24). B.C.A. 55 (513).

**631.445.7 : 631.416.1**—Diamond, W. E. de B. Fluctuations in the nitrogen content of some Nigerian soils. *Emp. J. Expt. Agric.* 5, 1937 (264-280).

**631.445.7 : 631.416.2**—Craig, N. The phosphate status of Mauritius soils. *Emp. J. Expt. Agric.* 5, 1937 (11-18).

**631.445.7 : 631.417.4**—Haddon, H. J. Factors governing the organic matter and the nitrogen content of tropical soils. *Korte Meded. Ag.-Proefsta. Landb.* 18, 1936, pp. 24. [Dut.e.]

**631.445.7 : 631.417.4**—Duthie, D. W. Studies in tropical soils. IV. Organic transformations in soils, composts, and peat. *J. Agric. Sci.* 27, 1937 (162-177).

# BIBLIOGRAPHY OF SOIL SCIENCE

**631.455.7 : 631.421**—Vries, O. de. Soil fertility studies in the Netherlands Indies. *Trans. 3rd Int. Cong. Soil Sci.* 2, 1935 (119-133).

**631.445.7 : 631.43**—Albareda, J. M. Characterization of tropical and sub-tropical soils by means of physical and physico-chemical analyses. *Rev. Acad. Madrid* 31 (1935 ?) (320-350, 457-514).

**631.445.7 : 631.445.2**—Hardon, H. J. Padang soil, an example of podzol in the tropical lowlands. *Proc. Acad. Sci. Amsterdam* 40, No. 6, 1937, pp. 11.

**631.445.7 : 631.452**—Albareda, J. M. The fertility of certain tropical soils. *Rev. Acad. Madrid* 31 (1935 ?) (515-519).

**631.445.7 : 631.461**—Corbet, A. S. Studies on tropical soil microbiology; 11. The bacterial numbers in the soil of the Malay Peninsula. *Soil Sci.* 38, 1934 (407-416).

**631.445.7 : 631.81**—Kintzel, W. Fertilizer questions in tropical agriculture. *Phosphorsäure* 5, 1935 (353-361).

**631.445.7 : 631.81**—Jacob, A. Manuring of tropical crops. *Tropenpflanzer* 39, 1936 (181-202).

**631.445.7 : 631.86**—Lambourne, J. Studies in Malayan soils. Part. IV. Experiments on the conditioning of an infertile soil. *Malay Agric. J.* 22, 1934 (457-473).

**631.445.7 : 633**. Zakharov, S. A. Creation and formation of cultivated soils in the humid subtropical region of the U.S.S.R. according to a fixed plan. *Trans. Int. Soc. Soil Sci. Soviet Section 5th Comm.* 1935 (95-106).

**631.445.72**—Theron, J. J.; Niekirk, P. le R. van. The nature and origin of black turf soils. *S. Afric. J. Sci.* 31, 1934 (320-346).

**631.445.72**—Bal, D. V. Some aspects of the black cotton soils of Central Provinces, India. *Emp. J. Expt. Agric.* 3, 1935 (261-268).

**631.445.72**—Hosking, J. S. A comparative study of the black earths of Australia and the regur of India. *Trans. Proc. Roy. Soc. S. Aust.* 59, 1935 (168-200).

**631.445.72**—Bal, D. V. Some aspects of the black cotton soils of Central Provinces, India. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (154-158).

**631.445.72**—Ramiah, P. V.; Raghavendrachar, C. The origin of black soils in the Madras Presidency. *Proc. Soc. Ind. Chem. India* 1, 1936 (9).

**631.445.72 : 631.416.1**—Wad, Y. D.; Aurangabadkar, R. K. Nitrogen balance in black cotton soils in the Malwa plateau. II. Changes during the hot weather. *Indian J. Agric. Sci.* 6, 1936 (316-350).

**631.445.72 : 631.416.1**—Bal, D. V. A study of the fluctuations in organic nitrogen content of black cotton soil under varying conditions of cropping. *Proc. Nat. Inst. Sci. India* 3, 1937 (155-161).

**631.445.72 : 631.58**—Kasinathan, S.; Balakrishnan, M. R. Soil condition as affected by cropping in the black-soil area of the Tinnevely district. *Madras Agric. J.* 24, 1936 (355-360). C.A. 31 (797).

**631.445.73**—Krishnan, M. S. Lateritization of khondalite. *Rec. Geol. Surv. India* 68, 1935 (392-399). C.A. 29 (6179).

**631.445.73**—Trapnell, C. G. "Laterite" and desert sands. *Proc. 2nd Conf. E. Afric. Agric. Chem.* 1934, Abs. 9, 1935 (57).

## FERTILIZERS AND GENERAL AGRONOMY

**631.445.73**—Trapnell, C. G. Notes on the occurrence of "laterite" in the Kafue region of Northern Rhodesia. *Proc. 2nd Conf. E. Afric. Agric. Chem.* 1934, Abs. 8, 1935 (55-57).

**631.445.73**—Van der Merwe, C. R. Grey ferruginous lateritic soils. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (303-306).

**631.445.73**—Van der Merwe, C. R. Laterites and lateritic red earths in the Union of South Africa. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (297-300).

**631.445.73** Fox, C. S. Buchanan's laterite of Malabar and Kanara. *Rec. Geol. Surv. India*, Pt. 4, 1936 (389-422).

**631.445.73**—Tkatchenko, B. Remarks on the lateritization process in grey soils. *Bull. Econ. Indochine* 39, 1936 (167-181). [F.]

**631.445.73 : 551.577** Craig, N.; Halais, P. The influence of maturity and rainfall on the properties of lateritic soils in Mauritius. *Emp. J. Expt. Agr.* 2, 1934 (349-356).

**631.445.73(083.72)**—Pendleton, R. L. On the use of the term laterite. *Amer. Soil Surv. Bull.* 17, 1936 (102-108).

## 631.452 8 FERTILITY, TOXICITY, EXHAUSTION

**631.452** Blair, A. W. Measuring soil fertility. *N. J. Agric. Expt. Sta. Circ.* 335, 1934, pp. 4. E.S.R. 72 (591).

**631.452**—Cutler, J. V. Some recent advances in soil science (with especial reference to soil fertility). *Proc. Tenth Ann. Cong. S. Afric. Sug. Tech. Assoc.* 1936 (131-142).

**631.452**—Ehrenberg, P. What do we know of soil "Gare". *ForschBerst.* 2, 1936 (124-135). [G.]

**631.452** Sjollem, B. Soil fertility. *Landbouwk. Tijdschr.* 48, 1936 (743-751). [Dn. e.]

**631.452**—Rothkegel. On the definition of "soil value". *Deut. Forstwart.* 19, 1937 (261-263). C.M.R. No. 14 (8).

**631.452**—Wehrwein, G. S. Public and private aspects of soil conservation. *Proc. Soil. Sci. Soc. Amer.* 1, 1937 (447-452).

**631.452 : 541.134.5**—Willis, L. G. Evidences of the significance of oxidation-reduction equilibrium in soil fertility problems. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (291-297).

**631.452 : 549**—Baren, F. A. van Minerals as bearers of the natural soil fertility. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (184-185). [E.]

**631.452 : 550.35** Müller, K. M. Preliminary investigations on the relations between soil activity and plant growth with a new physical measuring apparatus. *Phytopath. Ztschr.* 8, 1935 (623-632). [G.]

**631.452 : 581.5**—Rumensky, L. Principal and methodological assumptions of complex pedological-botanical investigations. *Pedology* No. 5, 1936 (693-717). [R.g.]

**631.452 : 631.51**—Driebehaus, W. The significance of soil cultivation for soil fertility. *Inaug. Diss. Landw. Hochsch. Berlin*, 1934, pp. 119.

**631.452 : 631.557**—Mooers, C. A. The influence of soil productivity on the order of yield in a varietal trial of corn. *J. Amer. Soc. Agron.* 25, 1933 (796-800).

**631.453 : 541.132**—Pupkin, A. F. Germination of *Apocynum* seeds in variously salinized soils. *Trudy Inst. Nov. Lub. Syr.* 4, 1933 (31-37). B.C.A.A. 1933 (1341).



# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.453 : 546.13**—**Shestakov, A. G. ; Shvyndenkov, V. G.** The influence of fertilizers containing large quantities of chlorine on the quality and quantity of crop yields. *Trudy Gdrazh Inst. Udob. Leningr. Lab.* No. 3, 1934 (3-40). C.A. 29 (2281). [R.]
- 631.453 : 546.13**—**Sokolov, A.** Significance of the soil type and of its mechanical composition for the sensitiveness of plants to chlorine. *Pedology* No. 3, 1934 (326-339). R.e.
- 631.453 : 546.13**—**Sokolov, A. V.** Reducing the harmful effect of excess of chlorides and ammonium chloride in Potazot. *Zh. Khim. Prom.* 13, 1936 (795-798). B.C.A. 56 (71).
- 631.453 : 546.19**—**Albert, W. B.** Arsenic toxicity in soils. *S. Carolina Agric. Expt. Sta. Rept.* 1933 (44-45). B.C.A. 54 (420).
- 631.453 : 546.19**—**Gile, P. L.** The effect of different colloidal soil materials on the toxicity of calcium arsenate to millet. *J. Agric. Res.* 52, 1936 (477-491).
- 631.453 : 546.19**—**Hurd-Karrer, A. M.** Inhibition of arsenic injury of plants by phosphorus. *J. Wash. Acad. Sci.* 26, 1936 (180-181). B.C.A. 55 (611).
- 631.453 : 546.47**—**Gall, O. E.** Zinc sulfate studies in the soil. *Citrus Indust.* 17, 1936 (20-21). C.A. 30 (1926).
- 631.453 : 546.683**—**Crafts, A. S.** Some effects of thallium sulfate upon soils. *Hilgardia* 10, 1936 (377-398).
- 631.453 : 546.74 6**—**Robinson, W. O. ; Byers, H. G.** Chemical studies of infertile soils derived from rocks high in magnesium and generally high in chromium and nickel. *U.S.D.A. Tech. Bull.* 471, 1935, pp. 28.
- 631.453 : 546.76**—**Scharrer, K. ; Schropp, W.** The effect of chromic and chromate ion on plants. *Ztschr. Pflanz. Dung.* 37, 1935 (137-149). G.
- 631.453 : 546.815**—**Scharrer, K. ; Schropp, W.** The effect of lead on plant growth. *Ztschr. Pflanz. Dung.* 43, 1936 (34-43). G.
- 631.453 : 546.815**—**Vandecaveye, S. C. ; Horner, G. M. ; Keaton, C. M.** Unproductiveness of certain orchard soils as related to lead arsenate spray accumulations. *Soil Sci.* 42, 1936 (203-213).
- 631.453 : 546.881**—**Scharrer, K. ; Schropp, W.** The effect of vanadium on plants. *Ztschr. Pflanz. Dung.* 37, 1935 (196-202). G.
- 631.453 : 631.416.862.1**—**Trénel, M. ; Alten, F.** The physiological significance of mineral soil acidity. *Angew. Chem.* 47, 1934, pp. 17. G.
- 631.453 : 631.416.862.1**—**Hester, J. B.** The amphoteric nature of three Coastal Plain soils. I. In relation to plant growth. *Soil Sci.* 39, 1935 (237-243).
- 631.453 : 631.416.862.1**—**Shorland, F. B.** Aluminium as an index of soil contamination. *Analyst* 60, 1935 (467). C.A. 29 (6683).
- 631.453 : 631.416.862.1**—**Scharrer, K. ; Schropp, W.** The effect of aluminium ion on plant growth. *Ztschr. Pflanz. Dung.* 45A, 1936 (83-95). G.
- 631.454 : 619**—**Dixon, J. K.** Sheep ailment in Southland. *N. Z. J. Sci. Tech.* 17, 1936 (600-619). B.C.A. 55 (613).

## FERTILIZERS AND GENERAL AGRONOMY

**631.454 : 619**—Fergus, E. N. Shall crops be adapted to soils or soils to crops? *J. Amer. Soc. Agron.* 28, 1936 (443-446). *Herb. Abs.* 6 (220).

**631.454 : 619**—Rigg, T.; Askew, H. O. Further investigations on bush-sickness at Glenhope, Nelson, New Zealand. *Emp. J. Expt. Agric.* 4, 1936 (1-5).

**631.454 : 619**—Spangenberg, G. E. The improvement of large grazing areas. Contribution to the study of the forage problem in Uruguay. *Arch. Fitotec. Uruguay* 1, 1936 (322-356). *Herb. Abs.* 6 (427). [Sp.e.g.]

**631.454 : 631.416.2**—Green, J. R.; Harrington, F. M. Report on the investigation of phosphorus-deficient soils, 1935. *Mont. Agric. Expt. Sta. Bull.* 316, 1936, pp. 18.

**631.454 : 631.416.4 : 535.21**—Rohde, G. The depression of light absorption of plants by lack of potassium. *Ztschr. Pflanz. Düng.* 44, 1936 (247-255). [G.]

**631.458**—Bronsart, H. v. Soil fatigue as a biological problem. *Naturwissenschaften* 21, 1933 (310). P.I.S. 10 (132). [G.]

**631.458**—Fuente, C. C. de la. Soil fatigue. *Econ. Tec. Agric. Madrid* 5, 1936 (1-5). [Sp.]

**631.458**—Rippel, K. Definition and nature of soil "fatigue". *Phytopath. Ztschr.* 9, 1936 (507-512). [G.]

**631.458**—Robinson, G. W. Soil deterioration. *Cambridge Univ. Agric. Soc. Mag.* 5, 1937 (30-36).

**631.458 : 631.416**—Spilsbury, R. H. A chemical examination of a degraded Glenmore clay. *Sci. Agric.* 16, 1936 (233-237).

**631.458 : 631.416**—De Turk, E. E. Soil conservation from the viewpoint of soil chemistry. *J. Amer. Soc. Agron.* 29, 1937 (93-111).

**631.458 : 631.432**—Gracie, D. S.; Rizk, M., et al. The nature of soil deterioration in Egypt. *Egypt Min. Agric. Bull.* 148, 1934, pp. 22.

**631.458 : 631.445.7**—Jacob, A. How should soil exhaustion caused by tropical crops be dealt with? *Tropenpflanzer* 40, 1937 (273-281). [G.]

**631.458 : 632.953**—Johansson, E. Treatment of soil with various chemicals as a remedy for exhaustion in orchard and nursery. *Scand. Pomol. Forch. Arskr.* 37, 1936 (139-163). *Herb. Abs.* 6 (155). [Sw.e.]

## 631.459 EROSION

**631.459**—Freudenthal, L. E. Flood and erosion control as possible unemployment relief measures. *Science* 78, 1933 (445-449).

**631.459**—Baird, R. W.; Hendrickson, B. H. Outline of investigational work in progress at soil erosion experiment station No. 4, Tyler, Texas. *U.S.D.A. Bur. Agric. Engng., Chem. Soils*, etc., May 10, 1934, pp. 5. *Mimeo.*

**631.459**—Burgers, H. T. Erosion: or the denudation and degradation of a sub-continent. *Afric. Observer* 1, 1934 (17-22). *Herb. Abs.* 4 (240).

**631.459**—Beckley, V. A. Soil erosion. *Kenya Dept. Agric. Bull.* 1 of 1935, pp. 68.

**631.459**—Bennett, H. H. Attacking the soil erosion problem on a nation-wide front. *Agric. Engng.* 16, 1935 (293-297).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.459--Bennett, H. H. Facing the erosion problem. *Science* 81, 1935 (321-326).
- 631.459--Clayton, E. S. Gully erosion. A serious menace to farming and reclaiming land. *Agric. Gaz. N.S.W.* 46, 1935 (549-551).
- 631.459--Corrie, R. MacLagan. The use and misuse of land. *Oxford Forest. Mem.* No. 19, 1935, pp. 80.
- 631.459--Craf, D. Soil erosion and its prevention. *U.S.D.A. Bur. Agric. Engng.* 1935 (91). E.S.R. 73 (548).
- 631.459--Gussak, V. B. Experimental study of sheet erosion and run-off on red soils in the wet subtropics of Adzharia. *Pedology* No. 1, 1935 (35-56). R.
- 631.459--Hendrikson, B. H.; Baird, R. W. Brief summary of principal results for 1931-34. Soil Erosion Experiment Station, No. 4, Tyler, Texas. *U.S.D.A. Soil Conserv. Serv.* 1935, pp. 24.
- 631.459--Lowdermilk, W. C. Man-made deserts. *U.S.D.A. Soil Conserv. Serv.* 1936, SCS-MP 4, pp. 8. E.S.R. 76 (111).
- 631.459--Lowdermilk, W. C. Soil erosion and its control in the United States. *Trans. 3rd Int. Cong. Soil Sci.* 2, 1935 (181-194).
- 631.459--Pankov, A. M. The present state of the problem of the yielding of soils to erosion. *Dokuchaev Inst. Studies Genesis Geography Soils* 1935 (229-253). R.
- 631.459--Rhodesia Agricultural Journal. The dangers of soil erosion and methods of prevention. *Rhodesia Agric. J.* 32, 1935 (533-542).
- 631.459--Stockdale, F. A. Soil erosion. *Emp. Coll. Geogr. Rev.* 12, 1935 (1-8).
- 631.459--Eakin, H. M. Silting of reservoirs. *U.S.D.A. Tech. Bull.* 524, 1936, pp. 141.
- 631.459--International Sugar Journal. Erosion. *Int. Sug. J.* 38, 1936, 50-52.
- 631.459--Penzhorn, K. E. W. Soil erosion on cultivated lands. *Farm. S. Africa* 11, 1936 (251-252).
- 631.459--Sampson, H. C. Soil erosion in tropical Africa and problems connected with it. *Emp. Coll. Geogr. Rev.* 13, 1936 (20-27).
- 631.459--Teakle, L. J. H. Soil erosion and soil conservation. *J. Dept. Agric. W. Aust.* 13, 1936 (273-284).
- 631.459--Thorp, J. Soil erosion in China. *J. Assoc. Chinese Amer. Engngs.* 17, 1936 (183-210).
- 631.459--Cook, H. L. The nature and controlling variables of the water erosion process. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (487-494).
- 631.459--Cooperrider, C. K.; Hendricks, B. A. Soil erosion and stream flow on range and forest lands of the upper Rio Grande watershed in relation to land resources and human welfare. *U.S.D.A. Tech. Bull.* 567, 1937, pp. 88.
- 631.459--Kuron, H. The significance of soil erosion research in general soil science. *Soil Res.* 5, 1937 (229-237). G.
- 631.459--Pankov, A. M. Normal denudation and soil erosion. *Eroz. Pochv. Dokuchaev Inst.* 1937 (8-48). R.
- 631.459--Richardson, E. G. The transport of soil and salts by running water. *Proc. Int. Soc. Soil Sci.* 12, 1937 (8-9). E.
- 631.459--Thoomickian, S. Soil erosion and its control. *Allahabad Farmer* 11, 1937 (268-275, 281).

## FERTILIZERS AND GENERAL AGRONOMY

- 631.459:338.98**—Latham, B. M. The correlation of soil erosion and tax delinquency in the Piedmont area of S. Carolina. *U.S.D.A. Soil Conserv. Serv.* 1936, S.C. S.-R.B. 1, pp. 22. F.S.R. 77 (118).
- 631.459:338.98**—Shaw, C. F. Is nationalism promoting erosion? *Geog. Rev.* 26, 1936 (149-150).
- 631.459:55**—Browne, W. R. The geological background of soil erosion. *J. Aust. Inst. Agric. Sci.* 3, 1937 (142-146).
- 631.459:551.41**—Morse, H. H. A graphic method of showing the relationships of erosion, slope and cover. *Soil Conservation* 2, 1936 (67). C.M.R. No. 10 (7).
- 631.459:551.41**—Utz, E. J. Some ABC's of soil conservation. *Soil Conservation* 1, No. 8, 1936 (1-3).
- 631.459:551.41**—Brown, H. Bates. Slope factors in soil erosion. *Soil Conservation* 2, No. 10, 1937 (240-242). C.M.R. 15 (7).
- 631.459:551.41**—Shcheklein, S. L. Soil erosion near Kirov. *Izv. Pechu, Dzhukhaz Inst.* 1937 (295-302). [R.]
- 631.459:551.5**—Brooks, C. F.; Tiessen, A. H. The meteorology of great floods in the Eastern United States. *Geog. Rev.* 27, 1937. *Rev. in Nature* 140, 1937 (511).
- 631.459:551.511**—Du Toit, R. Protecting the pasture against wind-blown sea sand. *Farm. S. Africa* 9, 1934 (403-404). *Herb. Abs.* 5 (48).
- 631.459:551.511**—Daniel, H. A. Calculated net income resulting from level terraces on Rich field silt loam soil and suggested lines of defence against wind erosion. *Panhandle Agric. Expt. Sta. Bull.* 58, 1935, pp. 14. F.S.R. 74 (264).
- 631.459:551.511**—Fly, C. L. A preliminary report of the chemical and mechanical analyses of dust deposited by wind at Goodwell, Oklahoma. *Panhandle Agric. Expt. Sta. Bull.* 57, 1935 (11-15). F.S.R. 73 (751).
- 631.459:551.511**—Hafenrichter, A. L.; Wanser, H. M. Wind erosion on the summer fallowed wheatlands of the West. *Soil Conservation* 1, No. 2, 1935 (8-10).
- 631.459:551.511**—Hopkins, E. S. Soil drifting in Canada. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (403-405).
- 631.459:551.511**—Hopkins, E. S.; Barnes, S.; Palmer, A. E. Soil drifting control in the Prairie Provinces. *Canada Dept. Agric. Bull.* 179 (n.s.), 1935, pp. 39.
- 631.459:551.511**—Hutton, J. G. Soil erosion and soil run in South Dakota. *Amer. Soil Surv. Bull.* 16, 1935 (123). F.S.R. 74 (757).
- 631.459:551.511**—Kellogg, C. E. Soil blowing and dust storms. *U.S.D.A. Misc. Pub.* 221, 1935, pp. 11.
- 631.459:551.511**—Moss, H. C. Some field and laboratory studies of soil drifting in Saskatchewan. *Sci. Agric.* 15, 1935 (665-679). C.A. 29 (7543).
- 631.459:551.511**—Nelson, A. L. Soil erosion. Archer Field Station. *Wyo. Agric. Expt. Sta. Bull.* 208, 1935, pp. 35.
- 631.459:551.511**—Bennett, H. H. Waste by wind and water. *Tea Quant.* 9, 1936 (73-79).
- 631.459:551.551**—Brandon, J. F.; Kezer, A. Soil blowing and its control in Colorado. *Colo. Agric. Expt. Sta. Bull.* 419, 1936, pp. 20.

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.459:551.511—Caird, R. W. Tendencies in the natural revegetation of wind erosion areas on the northern Great Plains. *Amer. Soil Surv. Bull.* 17, 1936 (132-135).
- 631.459:551.511—Call, L. E. Cultural methods of controlling wind erosion. *J. Amer. Soc. Agron.* 28, 1936 (193-201).
- 631.459:551.511—Chiera, A. Halting Italy's shifting sands. *Soil Conservation*, 1, No. 6, 1936 (14).
- 631.459:551.511—Cosby, S. W. Conservation of the organic soils in the Sacramento-San Joaquin delta. *Amer. Soil Surv. Bull.* 17, 1936 (116-117).
- 631.459:551.511—Finnell, H. H. Prevention and control of wind erosion of high plains soils in the Panhandle area. *U.S.D.A. Soil Conserv. Serv.* 1936, pp. 13. *Herb. Abs.* 6 (350).
- 631.459:551.511—Griffiths, R. L. Wind erosion of soils in the agricultural areas. *J. Dept. Agric. S. Aust.* 40, 1936 (25-40).
- 631.459:551.511—Hardt, G. Soil drift formation and the liming of alkaline moor soils in dry regions. *Ztschr. Pflanz. Dung.* 45, 1936 (216-238). [G.]
- 631.459:551.511—Laver, C. G. Reclamation of drift sands. *Farm. S. Africa* 11, 1936 (53-57).
- 631.459:551.511—Palmer, A. E. The soil drifting problem in the Prairie Provinces. *Sci. Agric.* 16, 1936 (264-265).
- 631.459:551.511—Perry, D. H. Some notes on coastal sand drift fixation in Western Australia. *Aust. Forestry* 1, No. 2, 1936 (33-36). *C.M.R.* No. 13 (4).
- 631.459:551.511—Ratcliffe, F. N. Soil drift in the arid pastoral areas of South Australia. *Aust. Coun. Sci. Indust. Res. Pamph.* 64, 1936, pp. 84.
- 631.459:551.511—Chilcott, E. F. Preventing soil blowing on the Southern Great Plains. *U.S.D.A. Farm. Bull.* 1771, 1937, pp. 29. *E.S.R.* 77 (309).
- 631.459:551.511—Drake, R. R. Wind erosion and its control. *Agric. Engng.* 18, 1937 (197-198, 200).
- 631.459:551.511—Joel, A. H. Soil conservation reconnaissance survey of the Southern Great Plains wind-erosion area. *U.S.D.A. Tech. Bull.* 556, 1937, pp. 68.
- 631.459:551.511—Ratcliffe, F. N. Further observations on soil erosion and sand drift, with special reference to South-Western Queensland. *Aust. Coun. Sci. Indust. Res. Pamph.* 70, 1937, pp. 28.
- 631.459:551.511—Rule, G. K. Emergency wind-erosion control. *U.S.D.A. Circ.* 430, 1937, pp. 10.
- 631.459:551.511—Vuren, J. P. J. The problem of wind-eroded lands. *Farm. S. Africa* 12, 1937 (108-109, 125).
- 631.459:551.511:631.3—Hardy, E. A. The use of tillage machinery in soil-drifting area. *Sci. Agric.* 16, 1936 (281-284).
- 631.459:551.511:631.417—Daniel, H. A.; Langham, W. H. The effect of wind erosion and cultivation on the total nitrogen and organic matter of soils in the southern high plains. *J. Amer. Soc. Agron.* 28, 1936 (587-596).
- 631.459:551.511:631.434—Daniel, H. A. The physical changes in soils of the southern high plains due to cropping and wind erosion and the relation between the sand + silt/clay ratios in these soils. *J. Amer. Soc. Agron.* 28, 1936 (570-580).

## FERTILIZERS AND GENERAL AGRONOMY

- 631.459 : 551.511 : 633.375**—Gustafson, A. F. Composition of black locust leaf mould and leaves and some observations on the effects of black locust. *J. Amer. Soc. Agron.* 27, 1935 (237-239).
- 631.459 : 551.577**—Bennett, H. H. Dynamic action of rains in relation to erosion in the humid region. *Trans. Amer. Geophys. Un. Fifteenth Ann. Meet.* 1934 (474-488).
- 631.459 : 551.577**—Lowdermilk, W. C.; Rowe, P. B. Still further studies on absorption of rainfall in its relations to surficial run-off and erosion. *Trans. Amer. Geophys. Un. Fifteenth Ann. Meet.* 1934 (509-515).
- 631.459 : 551.577**—Cornell, H. H. The relationship between soil and rain, with reference to soil erosion. Time the most important factor. *Farm. S. Africa* 10, 1935 (210, 212).
- 631.459 : 551.577**—Sitz, M. The problem of erosion caused by rain. *Hassadeh* 15, No. 4, 1935 (252). Hb.
- 631.459 : 551.577**—Thompson, W. R. Rainfall, soil erosion and run-off in South Africa. *Univ. Pretoria Ser.* No. 1, 29, 1935, pp. 31.
- 631.459 : 551.577**—Horton, R. E. Hydrologic inter-relations of water and soils. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (401-429).
- 631.459 : 551.577**—Thorndwalte, C. W. The life history of rainstorms. Progress report from the Oklahoma climatic research centre. *Geog. Rev.* 27, 1937 (92-111).
- 631.459 : 552.52**—Brown, C. B.; Barnes, F. F. Reservoirs in the New River watershed. *Soil Conservation* 2, 1936 (95, 106-107).
- 631.459 : 553.97**—Dachnowski-Stokes, A. P. Peat land as a conservor of rainfall and water supplies. *Ecology* 16, 1935(173-177).
- 631.459 : 581.144.2**—Weaver, J. E.; Kramer, J. Relative efficiency of roots and tops of plants in protecting the soil from erosion. *Science* 82, 1935 (354-355).
- 631.459 : 581.5**—Bennett, H. H. Soil erosion studies show vegetation has dominant role. *U.S.D.A. Yeark* 1934 (322-327). E.S.R. 72 (111).
- 631.459 : 581.5**—Lowdermilk, W. C. The rôle of vegetation in erosion control and water conservation. *J. Forestry* 32, 1934 (529-536).
- 631.459 : 581.5**—Musgrave, G. W. A quantitative study of certain factors affecting soil-and-water-losses as the logical basis for developing practical methods of erosion control. *Trans. Amer. Geophys. Un. Fifteenth Ann. Meet.* 1934 (516-521).
- 631.459 : 581.5**—Aikman, J. M. The relation of the stages of plant succession to soil erosion. *Iowa St. Coll. J. Sci.* 9, 1935 (379-388).
- 631.459 : 581.5**—Conrad, H. S. Mosses and soil erosion. *Iowa St. Coll. J. Sci.* 9, 1935 (347-351).
- 631.459 : 581.5**—Dodge, A. F. Measurement of run-off as influenced by plant cover density. *Iowa St. Coll. J. Sci.* 9, 1935 (399-407).
- 631.459 : 581.5**—Larsen, J. A. Natural revegetation on eroded soils in South Eastern Ohio. *Iowa St. Coll. J. Sci.* 9, 1935 (365-376).
- 631.459 : 581.5**—Lowdermilk, W. C. Certain aspects of the rôle of vegetation in erosion control. *Iowa St. Coll. J. Sci.* 9, 1935 (337-348).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.459:581.5—Meginnis, H. G. Effect of cover on surface run-off and erosion in the loessial uplands of Mississippi. *U.S.D.A. Circ.* 347, 1935, pp. 15.
- 631.459:581.5—Shantz, H. L. Challenge of erosion to botanists. *Iowa St. Coll. J. Sci.* 9, 1935 (353-363).
- 631.459:581.5—Uhland, R. E. The effect of plant cover on soil and water losses. *Iowa St. J. Sci.* 9, 1935 (329-336).
- 631.459:581.5—Weaver, J. E.; Harmon, G. W. Quantity of living plant materials in prairie soils in relation to run-off and soil erosion. *Neb. Univ. Bull.* 8, 1935, pp. 53. *Herb. Abs.* 5 (100).
- 631.459:581.5—Clements, F. E.; Chaney, R. W. Environment and life in the Great Plains. *Carnegie Inst. Wash. Suppl. Pub.* 24, 1936, pp. 54. *Herb. Abs.* 6 (350).
- 631.459:581.5—Flory, E. L. Comparison of the environment and some physiological responses of prairie vegetation and cultivated maize. *Ecology* 17, 1936 (67-103).
- 631.459:581.5—Herbage Reviews. The vegetation factor in erosion control. *Herb. Revs.* 4, 1936 (13-23).
- 631.459:581.5—Leppan, H. D. The interdependence of animals, crops and pasture with special reference to South African farming. *Univ. Pretoria Ser.* 1, 37, 1936, pp. 21.
- 631.459:581.5—McAtee, W. L. Groups of plants valuable for wild life utilization and erosion control. *U.S.D.A. Circ.* 412, 1936, pp. 11.
- 631.459:581.5—Osborn, B.; Whitaker, H. L. Significance of natural vegetation in planning erosion control and wild life management. *Soil Conservation* 2, No. 6, 1936 (126-129). *C.M.R.* 12, 1923 (3).
- 631.459:581.5—Pearse, C. K.; Wooley, S. B. The influence of range plant cover on the rate of absorption of surface water by soils. *J. Forestry* 31, 1936 (844-847).
- 631.459:581.5—Chapline, W. R. Range research in the United States. *Herb. Revs.* 5, 1937 (1-13).
- 631.459:619—Henry, M. Soil erosion and animal health are closely associated. *Agri. Gaz. N.S.W.* 48, 1937 (361-362, 366).
- 631.459:619—Hornby, H. E. The control of animal diseases in relation to overstocking and soil erosion. *Emp. J. Expt. Agric.* 5, 1937 (143-154).
- 631.459:625.78—Chambers, T. B. Co-operative efforts launched to control erosion along highways. *Soil Conservation* 1, No. 9, 1936 (14-11).
- 631.459:625.78—Kraebel, C. J. Erosion control on mountain roads. *U.S.D.A. Circ.* 380, 1936, pp. 45. *E.S.R.* 75 (405).
- 631.459:625.78—Davis, A. Erosion control along highways. *Agri. Engng.* 18, 1937 (169-170).
- 631.459:625.78—Rhodesia Agricultural Journal. The problem of soil conservation on land adjacent to main roads. *Rhod. Agric. J.* 34, 1937 (142-145).
- 631.459:627.51—Bailey, R. W.; Forsling, C. L.; Becraft, R. J. Floods and accelerated erosion in Northern Utah. *U.S.D.A. Misc. Pub.* 196, 1934, pp. 21.
- 631.459:627.51—Classen, A. G. Practical aspects of flood control and reclamation of overflowed lands. *Tex. St. Reclam. Dept. Bull.* 27, 1935, pp. 80. *E.S.R.* 75 (852).

## FERTILIZERS AND GENERAL AGRONOMY

- 631.459 : 627.51** —Bennett, H. H. Conservation farming practices and flood control. *U.S.D.A. Misc. Pub.* 253, 1936, pp. 16.
- 631.459 : 627.51** —Bennett, H. H. Soil conservation and flood control. *U.S.D.A.-SCS-MP.* 11, 1936, pp. 14. E.S.R. 76 (400).
- 631.459 : 627.51** —Eakin, H. M. Meeting the menace of over-flow waters. *Soil Conservation* 1, No. 6, 1936 (5-6).
- 631.459 : 627.51** —Oosthuizen, E. A. Catchment areas and safety of soil-erosion works. *Farm. S. Africa* 11, 1936 (317-318).
- 631.459 : 627.51** —Gorrie, R. M. The causes of floods in the Punjab. *Indian Forester* 73, No. 2, 1937 (119-122). C.M.R. No. 13 (3).
- 631.459 : 627.51** —Yarnell, D. L. Determining flood discharges from small watersheds. *Agric. Engng.* 18, 1937 (13, 14). E.S.R. 77 (110).
- 631.459 : 631.3** —Soil Conservation. Damming lister proves useful. *Soil Conservation* 1, No. 8, 1936 (3).
- 631.459 : 631.414.2** —Bouyoucos, G. J. The clay ratio as a criterion of susceptibility of soils to erosion. *J. Amer. Soc. Agron.* 27, 1935 (738-741).
- 631.459 : 631.417** —Waksman, S. A. Soil deterioration and soil conservation from the viewpoint of soil microbiology. *J. Amer. Soc. Agron.* 29, 1937 (113-122).
- 631.459 : 631.43** —Lutz, J. F. The relation of soil erosion to certain inherent soil properties. *Soil Sci.* 40, 1935 (439-457).
- 631.459 : 631.43** —Middleton, H. E.; Slater, C. S. The extent to which the erodibility of a soil can be anticipated by laboratory physical and chemical measurements. *Amer. Soil Surv. Bull.* 16, 1935 (128-130).
- 631.459 : 631.43** —Bradfield, R. Soil conservation from the viewpoint of soil physics. *J. Amer. Soc. Agron.* 29, 1937 (85-92).
- 631.459 : 631.43** —Rogers, H. T. Some physico-chemical relationships found in four erosive soils of the Piedmont Plateau region. *J. Amer. Soc. Agron.* 29, 1937 (1-9). C.A. 31 (1925).
- 631.459 : 631.432.3** —Musgrave, G. W. The infiltration capacity of soils in relation to the control of surface run-off and erosion. *J. Amer. Soc. Agron.* 27, 1935 (336-345).
- 631.459 : 631.434** —Yoder, R. E. A direct method of aggregate analysis of soils and a study of the physical nature of erosion losses. *J. Amer. Soc. Agron.* 28, 1936 (337-351).
- 631.459 : 631.44** —Fick, J. C. Erosion, plant growth and soil varieties. *Farm. S. Africa* 11, 1936 (464-465).
- 631.459 : 631.445.2** —Kasatkin, V. G. Soil erosion in podzolized zones. *Eroz. Pochv. Dokuchae Inst.* 1937 (21-33). R.
- 631.459 : 631.445.4** —Pankov, A. M. Soil erosion in the southern part of the central chernozem zone. *Eroz. Pochv. Dokuchae Inst.* 1937 (303-314). R.
- 631.459 : 631.445.7** —Gussak, V. B. Factors and intrinsic results of surface erosion of red soils under moist sub-tropical conditions in Georgia. *Eroz. Pochv. Dokuchae Inst.* 1937 (103-154). R.
- 631.459 : 631.47** —Fuller, G. L. A system for correlation of land forms and covers with soil classification. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (463-468).



# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.459:631.471**—Pankov, A. M. On the geography and cartography of soil erosion. *Pedology*, No. 6, 1934 (824-832). [R.]
- 631.459:631.471**—Moon, J. W. Tennessee Valley soil survey project. *Amer. Soil Surv. Bull.* 17, 1936 (63-67).
- 631.459:631.472**—Milne, G. Normal erosion as a factor in soil profile development. *Nature* 138, 1936 (548-549).
- 631.459:631.48**—Gerasimov, I. P. Denudation and soil development. *Eroz. Pochv. Dokuchaev Inst.* 1937 (69-75). [R.]
- 631.459:631.51**—Bourhill, A. F. Contour ploughing to safeguard that vital top foot in arable land. *Farm. Week. S. Africa* 51, 1936 (841-843).
- 631.459:631.557**—Klepinin, N. N. Erosion and yields. *Eroz. Pochv. Dokuchaev Inst.* 1937 (247-257). [R.]
- 631.459:631.557**—Kornev, Ya. V. Soil erosion as a factor in yields. *Eroz. Pochv. Dokuchaev Inst.* 1937 (185-246). [R.]
- 631.459:631.58**—Allison, R. V. The importance of the vegetation factor in water conservation and erosion control. *Amer. Soil Surv. Bull.* 16, 1935 (119-122).
- 631.459:631.58**—Beckley, V. A. Anti-erosion and soil conservation measures. *Proc. 2nd Conf. E. Afric. Agric. Chem.* 1934, Abs. 14, 1935 (60-61).
- 631.459:631.58**—Bennett, H. H. Relation of grass cover to erosion control. *J. Amer. Soc. Agron.* 27, 1935 (173-179).
- 631.459:631.58**—Lewis, H. G. Moisture conservation in relation to erosion control under Red Plains conditions in the Southwest. *Amer. Soil Surv. Bull.* 16, 1935 (124-126).
- 631.459:631.58**—Weaver, J. E.; Noll, W. C. Comparison of run-off and erosion in prairie, pasture and cultivated land. *Neb. Univ. Bull.* 11, 1935, pp. 37.
- 631.459:631.58**—Carnes, A. Vegetative control in soil conservation. *Agric. Engng.* 17, 1936 (341-342).
- 631.459:631.58**—Deeter, E. B. The rôle of strip-cropping in erosion control in the Blacklands of Texas. *Amer. Soil Surv. Bull.* 17, 1936 (163-164).
- 631.459:631.58**—Dunnewald, T. J. Marginal soil and farm abandonment in Campbell County, Wyoming. *J. Amer. Soc. Agron.* 28, 1936 (288-291).
- 631.459:631.58**—Miller, M. F. Soil conservation in an improved agriculture. *Missouri Agric. Expt. Sta. Bull.* 362, 1936, pp. 15.
- 631.459:631.58**—Miller, M. F. Cropping systems in relation to erosion control. *Missouri Agric. Expt. Sta. Bull.* 366, 1936, pp. 36.
- 631.459:631.582**—Carrier, L.; Kell, W. V. Strip cropping. *NCS-TP-2*, 1935, pp. 7. *Herb. Abs.* 6 (349).
- 631.459:631.582**—Kell, W. V.; Brown, G. F. Strip cropping for soil conservation. *U.S.D.A. Farm Bull.* 1776, 1937, pp. 37.
- 631.459:631.582**—Kononova, M. M. Means for increasing organic matter on the "spent lands" of eroded regions. *Eroz. Pochv. Dokuchaev Inst.* 1937 (259-272). [R.]
- 631.459:631.584**—Kell, W. V. Cover crops for soil conservation. *U.S.D.A. Farm Bull.* No. 1758, 1936, pp. 14.
- 631.459:631.61**—Hessler, L. H. Erosion control structures—drop inlets and spillways. *Wis. Agric. Expt. Sta. Res. Bull.* 122, 1934, pp. 66. *E.S.R.* 72 (700).

# FERTILIZERS AND GENERAL AGRONOMY

- 631.459:631.61**—Mattoon, W. R. Stop gullies—save your farm. *U.S.D.A. Farm. Bull.* 1737, 1934 (11). E.S.R. 72 (847).
- 631.459:631.61**—Ohio. Erosion control handbook. Project No. 14, Zanesville, Ohio. *U.S. Dept. Ing. Soil Erosion Serv.* 1934, pp. 69. E.S.R. 73 (113).
- 631.459:631.61**—Ayres, Q. C. Recommendations for the control and reclamation of gullies. *Iowa Engng. Expt. Sta. Bull.* 121, 1935, pp. 71. E.S.R. 74 (111).
- 631.459:631.61**—Baver, L. D. Soil erosion in Missouri. *Missouri Agric. Expt. Sta. Bull.* 349, 1935, pp. 65.
- 631.459:631.61**—Bennett, H. H. A look at some of the Western projects. *Soil Conservation I*, No. 4, 1935 (1-8).
- 631.459:631.61**—Clayton, E. S. Gully erosion. A serious menace to farming and grazing land. *Agric. Gaz. N.S.W.* 46, 1935 (609-612).
- 631.459:631.61**—Clayton, E. S. Gully erosion. *Agric. Gaz. N.S.W.* 46, 1935 (689-672).
- 631.459:631.61**—Gold Coast Farmer. Soil erosion. *Gold Coast Farmer* 3, 1935 (49).
- 631.459:631.61**—Merrill, L. P. Project working plan. Soil erosion service project No. 20, Lindale, Texas. *U.S. Dept. Int. Soil Erosion Serv.* 1935, pp. 96.
- 631.459:631.61**—Ramser, C. E. Gullies; how to control and reclaim them. *U.S.D.A. Farm. Bull.* 1234, 1935, pp. 34.
- 631.459:631.61**—Schickele, R.; Himmel, J. P.; Russell, M. H. Economic phases of erosion control in southern Iowa and northern Missouri. *Iowa Agric. Expt. Sta. Bull.* 333, 1935 (189-232).
- 631.459:631.61**—Allison, R. V. Some remarks on the scope and character of research in soil and water conservation. *Amer. Soil Surv. Bull.* 17, 1936 (150-154).
- 631.459:631.61**—Bennett, H. H. Managements and use of agricultural lands including farm woods and pastures. *U.S.D.A. SCS-MP-13*, Sept. 1936, pp. 39.
- 631.459:631.61**—Eaton, E. C. Flood and erosion control problems and their solution. *Amer. Soc. Civil Engngs. Pap.* 1950. *Repr. Trans.* 101, 1936 (1302-1362). C.M.R. 12, (5).
- 631.459:631.61**—Farming in South Africa. Schemes for soil-erosion control and water conservation. *Farm. S. Africa* 11, 1936 (299, 302).
- 631.459:631.61**—Hansis, F. W. Erosion control with the S.E.R.A. *Soil Sci.* 41, 1936 (231-238).
- 631.459:631.61**—Hennes, R. G. Analysis and control of land-slides. *Wash. Engng. Expt. Sta. Bull.* 91, 1936, pp. 57. E.S.R. 77 (164).
- 631.459:631.61**—Kohnke, H.; Cutler, J. S. Some aspects of soil erosion control in the United States. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (177-180).
- 631.459:631.61**—Kramer, E. W.; Anderson, A. L.; Arthur, M. B. Handbook of erosion control engineering in the national forests. *U.S.D.A. Forest Serv.*, 1936, pp. 90. E.S.R. 77 (309).
- 631.459:631.61**—Oosthuizen, E. A. Sites for dams under the soil erosion schemes. *Farm. S. Africa* 11, 1936 (158-159).
- 631.459:631.61**—Oosthuizen, E. A. Soil erosion. *Farm. S. Africa* 11, 1936 (99-101).

## BIBLIOGRAPHY OF SOIL SCIENCE

- 631.459:631.61**—Ramser, C. E. Watershed and hydrologic studies in soil conservation. *Agric. Engng.* 17, 1936 (373-376).
- 631.459:631.61**—Uhland, R. E. Soil conservation practices. *U.S.D.A. Soil Conserv. Serv.* 1936, pp. 2. E.S.R. 77 (19).
- 631.459:631.61**—Wilson, C. P.; Neale, P. E., et al. Soil and rainfall conservation in New Mexico. *N. Mex. Agric. Expt. Sta. Bull.* 238, 1936, pp. 45. E.S.R. 75 (404).
- 631.459:631.61**—Allred, C. E.; Esry, D. H. Soil conservation practices in actual use by farmers, Eastern Highland Rim, 1932-1936. *Tenn. Sta. Agric. Econ. and Rural Sociol. Dept. Monog.* 28, 1937, pp. 38. E.S.R. 77 (19).
- 631.459:631.61**—Aylen, D.; Roberts, R. H. Soil conservation. *Rhod. Agric. J.* 34, 1937 (90-120).
- 631.459:631.61**—Aylen, D.; Roberts, R. H. Soil conservation (contd.). *Rhod. Agric. J.* 34, 1937 (173-222).
- 631.459:631.61**—Fyvie, T. L. Only good farming will beat soil erosion. *Farm. Week. S. Africa* 52, 1937 (1478-1479).
- 631.459:631.61**—Hill, C. E. Whisker dams. *Soil Conservation* 2, No. 8, 1937 (174-175). C.M.R. No. 14 (1).
- 631.459:631.61**—Ireland, H. A. Rotation of gully heads. A new conservation practice for gully control. *Soil Conservation* 2, No. 10, 1937 (228-229). C.M.R. 15 (7).
- 631.459:631.61**—Jones, E. R. Drop inlet soil saving dams. *Agric. Engng.* 18, 1937 (349-351).
- 631.459:631.61**—Kosmenko, A. S. Work of the Novosilsky experiment station for studying methods in the control of erosion. *Eroz. Pochv. Detskchik. Inst.* 1937 (155-185). R.
- 631.459:631.61**—Lester-Smith, W. C. Soil erosion. *Trop. Agricul.* 88, 1937 (92-107).
- 631.459:631.61**—Lester-Smith, W. C. The conservation of the soil. *Trop. Agricul.* 89, 1937 (167-174).
- 631.459:631.61**—Musgrave, G. W.; Norton, R. A. Soil and water conservation investigations at the soil conservation experiment station, Missouri valley loess region, Clamuda, Iowa. *U.S.D.A. Tech. Bull.* 558, 1937, pp. 182.
- 631.459:631.61**—Nichols, M. L. Technology of erosion control. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (393-399).
- 631.459:631.613**—Carnes, A.; Wilson, J. B. Terracing in Alabama. *Ill. Agric. Expt. Sta. Ext. Circ.* 148, 1934, pp. 20. E.S.R. 72 (701).
- 631.459:631.613**—Du Toit, E. Yield improvement by means of contour banking. *Farm. S. Africa* 9, 1934 (410). *Herb. Abs.* 5 (34).
- 631.459:631.613**—Lyle, S. P. Terracing in a land use program. *U.S.D.A. Bur. Agric. Engng.* 1934, pp. 5. E.S.R. 72 (701).
- 631.459:631.613**—Ramser, C. E. Latest results of engineering experiments at the soil erosion experiment stations. *U.S.D.A. Bur. Agric. Engng.* 1934, pp. 11. E.S.R. 72 (700).
- 631.459:631.613**—Baird, R. W. Recent results of engineering experiments in soil and water conservation at the soil erosion experiment station, Tyler, Texas. *Proc. Sixth S.-W. Soil Water Conserv. Conf. Tex.* 1935 (16-20). E.S.R. 74 (860).
- 631.459:631.613**—Bartel, F. O. Results of recent engineering studies in soil erosion control. *Agric. Engng.* 16, 1935 (304-307, 312).

## FERTILIZERS AND GENERAL AGRONOMY

- 631.459 : 631.613** Chambers, T. B. Terracing practices vary according to conditions. *Soil Conservation* 1, No. 1, 1935 (12-13).
- 631.459 : 631.613** Hopkins, P. L. A summary of the recent results of engineering experiments in soil and water conservation at the Blackland Soil Erosion Experiment Station, Temple, Texas. *Proc. Sixth S.-W. Soil Water Conserv. Conf. Tex.* 1935 (24-27). F.S.R. 74 (860).
- 631.459 : 631.613** McGrew, P. C. Engineering experiments in soil erosion control in the Northwest. *Agric. Engng.* 16, 1935(187-189).
- 631.459 : 631.613** Riesbol, H. S. Selection of channel grade for terraces. *Agric. Engng.* 16, 1935 (308-312).
- 631.459 : 631.613** Koe, H. B.; Neal, J. H. Soil erosion control in farm operation. *Minn. Univ. Agric. Extn. Div. Spec. Bull.* 170, 1935, pp. 20.
- 631.459 : 631.613** Roe, H. B.; Neal, J. H. Soil erosion control by engineering methods. *Minn. Univ. Agric. Extn. Div. Spec. Bull.* 171, 1935, pp. 24.
- 631.459 : 631.613** Gussak, V. B. Control of erosion in connection with the utilization of slopes for citrus. *Soils of the Soviet Subtropics, Moscow* 1936 (203-232). *Pedology* 1937 (309).
- 631.459 : 631.613** Harper, H. J. Studies on the use of the terracing plough for soil conservation. *J. Amer. Soc. Agron.* 28, 1936 (301-309).
- 631.459 : 631.613** Hamilton, C. L.; Wooley, J. C. et al. Engineering phases of soil erosion control. A symposium. *Agric. Engng.* 17, 1936 (205-214).
- 631.459 : 631.613** Lehmann, E. W.; Hay, R. C. Terraces to save the soil. *All Agric. Extn. Sta. Circ.* 459, 1936, pp. 31.
- 631.459 : 631.613** Moyer, K. T. Agricultural soils in a loess region of north China. *Geog. Rev.* 26, 1936 (414-425). *Hyb. Abs.* 6 (220).
- 631.459 : 631.613** Nichols, M. L. New developments in terracing in the Southeast. *Agric. Engng.* 17, 1936 (393-394).
- 631.459 : 631.613** Path, J. The terracing of slopes for citrus plantations. *Hadas* 9, 1936 (282-285).
- 631.459 : 631.613** Robertson, C. L.; Husband, A. D. Results from Glenora soil conservation experiment station, 1934-35 season. *Rhod. Agric. J.* 33, 1936 (162-172).
- 631.459 : 631.613** Schildknecht, H. Soil wash in agriculture and its control by "kulturtechnical" means. *Kulturtech.* 39, 1936 (58-66). [G.]
- 631.459 : 631.613** Aitchison, H. J. Practical tips in the campaign of dam-building. *Farm Weekly S. Africa* 53, 1937 (1065-1067).
- 631.459 : 631.613** Brown, G. Spreading water in the East. *Soil Conservation* 2, 1937 (143, 145).
- 631.459 : 631.613** Dahl, A. S. Progress report on contour furrowing in the Corn Belt. *Soil Conservation* 2, 1937 (141-142, 145).
- 631.459 : 631.613** Henry, J. J.; Nichols, M. L. The Nichols terrace: an improved channel-type terrace for the south-east. *U.S.D.A. Farm. Bull.* 1790, 1937, pp. 12.
- 631.459 : 631.613** Holman, A. T. Terrace cross sections as influenced by soil, crops, land slopes, and farm machinery. *Agric. Engng.* 18, 1937 (5-8).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.459:631.613** Newport, F. G. A corduroy coat protects High Plains from drought. *Soil Conservation* 2, 1937 (139-140, 145).
- 631.459:631.613** Semple, A. T. Following contour furrows across the United States. *Soil Conservation* 2, 1937 (134-138, 145).
- 631.459:631.613** Sinel'nikov, N. P. The control of soil erosion and terrace calculations. *Eröz. Poche, Dokuchaev Inst.* 1937 (315-351). R.
- 631.459:631.62** Cuba, P. Erosion control measures. *Rev. Agric. S. Paulo* 8, 1933 (288-298).
- 631.459:631.81** Science. Fertilizing and soil erosion. *Science* 80, 1934 (6-7). *Herb. Abs.* 5 (36).
- 631.459:631.81** Kornev, Ya V. The problem of manuring eroded slopes. *Khim. Sotsial. Zemel.* No. 4, 1935 (12-19). [R.g.]
- 631.459:631.81** Pankov, A. M. Run off and certain fertilizer problems. *Khim. Sotsial. Zemel.* Nos. 11-12, 1935 (10-16). R.
- 631.459:631.81** Buie, T. S. Relation of soil and water conservation to the fertilizer industry. *Amer. Fert.* July 24, 1937 (7-9, 24-25).
- 631.459:631.81** Kornev, Ya V. The utilization of "spent lands" in relation to certain erosion factors. *Eröz. Poche, Dokuchaev Inst.* 1937 (273-294). R.
- 631.459:631.821.1** Armsby, S. P. Lame as a factor in soil conservation. *Soil Conservation* 1, No. 4, 1935 (9).
- 631.459:631.821.1** Peele, T. C. The effect of calcium on the erodibility of soils. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (47-58).
- 631.459:632.732** Naude, T. Y. Termites in relation to veld destruction and erosion. *S. Africa Dept. Agric. Bull.* 134, 1934, pp. 12.
- 631.459:633** Collins, H. E. Plants of promise in gully slope protection. *Soil Conservation* 1, No. 4, 1935 (14-16).
- 631.459:633** Eagles, L. D. Planting materials used in soil conservation. *Soil Conservation* 2, 1937 (152).
- 631.459:633.2** Science. Science news. Items. Erosion checking grasses. *Science* 82, No. 2132, 1935, Suppl. *Herb. Abs.* 6 (30).
- 631.459:633.2** Carrier, L. Grass in soil erosion control. *SCS-TP* 4, 1936, pp. 15. *Herb. Abs.* 6 (352).
- 631.459:633.2** Enlow, C. R. Promising introduced species. *Amer. Soil Surv. Bull.* 17, 1936 (118-120).
- 631.459:633.2** Welton, K. Erosion control grasses of the corn belt. *Amer. Soil Surv. Bull.* 17, 1936 (121-126).
- 631.459:633.2** Timson, S. D. Natural protection from soil erosion. *Rhod. Agric. J.* 34, 1937 (146-158).
- 631.459:633.21** Uhland, R. E. The use of bluegrass sod in the control of soil erosion. *U.S.D.A. Farm Bull.* 1760, 1936, pp. 12.
- 631.459:633.261** Harmon, G. L. How gullies are controlled by vegetation in South Carolina. *Soil Conservation* 1, No. 10, 1936 (12-13).
- 631.459:633.266** Noter, R. de. Paspalum notatum Flueg A grass which is resuscitated from its ashes. *Rev. Hort. Agric. Afr. Nord* 39, 1935 (233-235). *Herb. Abs.* 5 (316).
- 631.459:633.283** Rensburg, J. A. van. Use of Kikuyu grass in combating soil erosion. *Farm. S. Africa* 10, 1935 (21).

## FERTILIZERS AND GENERAL AGRONOMY

- 631.459 : 633.283—Hendricks, B. A.** Vine-mesquite for erosion control on south-western ranges. *U.S.D.A. Leaflet* 114, 1936 pp. 8.
- 631.459 : 633.287—Fulps, J. L.** Blue grama grass for erosion control and range reseeding in the great plains and a method of obtaining seed in large lots. *U.S.D.A. Circ.* 402, 1936, pp. 8.
- 631.459 : 633.288—Otero, J. R. de.** *Eragrostis curvula*, var. *valida* Stapf. *Rev. Dept. Nac. Prod. Animal. (Brazil)* 1, 1934 (109-123). *Herb. Abs.* 6 (81).
- 631.459 : 633.393—Rubidge, S. H.** Karroo's drought and erosion war. *Farm. Week. S. Africa* 52, 1937 (1817-1819).
- 631.459 : 633.883.252—Farmer's Weekly.** Combating soil erosion with aloes. *Farm. Week. S. Africa* 50, 1936 (1439).
- 631.459 : 634.9—Lowdermilk, W. C.** Studies in the rôle of forest vegetation in erosion control and water conservation. *Pacific Sci. Cong. Proc.* 1933, 5, 1934 (3963-3990).
- 631.459 : 634.9—McIntyre, A. C.** Trees and erosion control. *Amer. Soil Surv. Bull.* 15, 1934 (110-114). *E.S.R.* 74 (495).
- 631.459 : 634.9—South Africa.** Forests in relation to climate, water conservation and erosion. *S. Africa Dept. Agric. Bull.* 159, 1935, pp. 58.
- 631.459 : 634.9—Voorendyk, J. J.** Planting trees for special purposes. 1. For veld conservation. *Farm. S. Africa* 10, 1935 (108-109, 118).
- 631.459 : 634.9—Voorendyk, J. J.** Trees as an agency in preventing soil erosion. *Farm. S. Africa* 10, 1935 (73-74).
- 631.459 : 634.9—Behre, E.** The place of forestry in the new agricultural conservation program. *J. Forestry* 34, 1936 (674-681).
- 631.459 : 634.9—Ramsey, G. R.** Trees to control soil erosion on Iowa farms. *Iowa St. Coll. Ext. Circ.* 223, 1936, pp. 12. *C.M.R.* No. 11 (6).
- 631.459 : 634.9—Spillers, A. R.** A correlation of erosion with land use and slope in the Norris Dam watershed. *J. Forestry* 34, 1936 (492-497).
- 631.459 : 634.9—Tischendorf, W.** Research on erosion arising from caliper measurements. *Forstarchiv* 12, 1936 (369-373). *C.M.R.* No. 10 (7).
- 631.459 : 634.9—Warren, W. D. M.** Effect of forests on erosion, floods, climate and rainfall, and on irrigation experiments. *Indian Forester* 63, 1936 (414-417).
- 631.459 : 634.9—Albisetti, C.** Reforestation and defence works for controlling erosion and stream flow in the Val Colla. *J. Forest. Suisse*, 88, No. 2, 1937 (37-41). *C.M.R.* No. 13 (8).
- 631.459 : 634.953.6—Fyvie, T. L.** Planned paddocks beat erosion and other evils. *Farm. Weekly S. Africa* 53, 1937 (1069-1071).
- 631.459 : 634.989.84—Meginnis, H. G.** Influence of forest litter on surface run-off and soil erosion. *Amer. Soil Surv. Bull.* 16, 1935 (115-118).
- 631.459 : 77.03—Coppie, R. F.** Photography in relation to pasture investigation in the soil conservation service. *J. Amer. Soc. Agron.* 28, 1936 (404-410).
- 631.459.005—Merkle, F. G.** An equipment for demonstrating soil erosion and its control. *J. Amer. Soc. Agron.* 26, 1934 (626-628). *E.S.R.* 72 (395).

## BIBLIOGRAPHY OF SOIL SCIENCE

**631.459.005**—Richardson, E. G. Measurements of erosion by water, using electrical methods. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (405-407).

**631.459.005**—Weaver, J. E.; Noll, W. Measurement of run-off and soil erosion by a single investigator. *Ecology* 16, 1935 (1-12).

**631.459.083.72** Snyder, J. M.; Paschall, A. H. Committee of Nomenclature. Sub-Committee on erosion terms. *Amer. Soil Surv. Bull.* 17, 1936 (96-97).

## 631.46 SOIL MICROBIOLOGY

**631.46**—Waksman, S. A. Soil microbiology. *Ann. Rev. Biochem.* 5, 1936 (561-584).

**631.46**—Winogradsky, S. The doctrine of pleomorphism in bacteriology. *Soil Sci.* 43, 1937 (327-340).

**631.46 : 576.809.6** Verona, O. Researches on the lytic principle in cultivated soils. *Bull. Soc. Int. Microbiol. Sci. Ital.* 6, 1934 (427-430). *Bull. Inst. Pasteur* 34 (319).

**631.46 : 576.809.6** Verona, O. Bacteriophage and agriculture. *Ital. Agric.* 72, 1935 (657-663). *Herb. Abs.* 6 (1).

**631.46 : 577.17**—Boas, F. Comparative study of growth stimulants in indigenous plants. Contributions to the active physiology of indigenous plants. II. *Ber. Deut. Bot. Ges.* 53, 1935 (495-511). *Herb. Abs.* 5 (250).

**631.461**—Grundmann, E. The ecology of *Bacillus mycoides* (Flügge). *Arch. Mikrobiol.* 5, 1934 (57-83). *Biol. Zbl.* 65 (247).

**631.461**—Novogradsky, D.; Mesineva, M. Filterable forms of soil bacteria. *Mikrobiologiya* 3, 1934 (470-484). *Bull. Inst. Pasteur* 34 (318).

**631.461**—Conn, H. J. Soil bacteria that conserve nitrogen I. *Farm. Res.* 1, No. 2, 1935 (8). *E. S. R.* 72 (591).

**631.461**—Conn, H. J. Soil bacteria that conserve nitrogen. III. *Farm. Res.* 2, No. 1, 1935 (8-9). *E. S. R.* 74 (165).

**631.461**—Conn, H. J.; Darrow, M. A. Characteristics of certain bacteria belonging to the autochthonous microflora of soil. *Soil Sci.* 39, 1935 (95-110).

**631.461**—Heigener, H. The utilization of amino acids as single sources of carbon and nitrogen by known soil bacteria and a description of newly isolated betaine and valine utilizers. *Zbl. Bakt.* 93, 1935 (81-113). *C. A.* 30 (3146). G.

**631.461**—Novogradsky, D.; Kononenko, E. Studies on the main ecological forms of *B. mycoides*. *Trans. Int. Soc. Soil Sci. Soviet Sect. A*, 1935 (128-134).

**631.461**—Okada, Yousuke. Soil microflora of *Pseudosasa* association. II. *Tohoku Imp. Univ. Sci. Rept.* 10, 1935 (291-298). *C. A.* 29 (8294).

**631.461**—Smith, F. B.; Brown, P. E.; Millar, H. C. The rhythmical nature of microbiological activity in soil as indicated by the evolution of carbon dioxide. *J. Amer. Soc. Agron.* 27, 1935 (104-108).

**631.461**—Okada, Y. Occurrence of masses of gelatinous microbes in the soil. *Soil Sci.* 43, 1937 (367-371).

## FERTILIZERS AND GENERAL AGRONOMY

- 631.461--Waksman, S. A.** Associative and antagonistic effect of micro-organisms. I. Historical reviews of antagonistic relationships. *Soil Sci.* 43, 1937 (51-68).
- 631.461--Waksman, S. A.; Foster, J. W.** Associative and antagonistic effects of micro-organisms: II. Antagonistic effects of micro-organisms grown on artificial substrates. *Soil Sci.* 43, 1937 (69-76).
- 631.461 : 525.5--Metzen, O. v.** Comparative consideration of different soils as regards bacterial numbers, nitrogen fixation and nitrate formation. *Zbl. Bakt.* 94, 1936 (142-175). [G.]
- 631.461 : 541.132--Pruzhanakaia, E. M.** Salt selection by soil micro-organisms. *Bull. Acad. Sci. (U.S.S.R.)* No. 7, 1934 (967-991). [R.]
- 631.461 : 541.132--Isakova, A. A.** The influence of external conditions on changes in the activity of plant rhizospheres. *Bull. Acad. Sci. (U.S.S.R.)* No. 8, 1935 (1147-1162). [R.]
- 631.461 : 547.995.1--Bucherer, H.** Microbial action on chitin. *Zbl. Bakt.* 93, 1935 (12-24). [C.A. 30 (3146).]
- 631.461 : 551.58--Misustin, E.** Adaptability of soil bacteria to temperature conditions of climate. *Mikrobiologia* 2, 1933 (174). [P.I.S. 9 (174).] [R.]
- 631.461 : 551.58--Szilvinyi, A. v.** Climate and soil microbiology. *Bioklim. Beibl. Met. Ztschr.* No. 4, 1934 (29-32). [E.S.R. 72 (588).]
- 631.461 : 553.97--Begak, D. A.; Belikova, N. M.** The numbers and distribution of micro-organisms in superficial peat layers. *Trudy Torf. Inst.* No. 14, 1934 (44-78). *Pedology* 1936 (931). [R.]
- 631.461 : 553.97--Maksimova, O. P.** Microbiological investigation of peat. *Trudy Torf. Inst.* No. 13, 1934 (107-113). *Pedology* 1936 (931). [R.]
- 631.461 : 581.144.2--Krasilnikov, N. A.; Kriss, A. E.; Litvinov, M. A.** The microbiological characteristics of the rhizosphere of cultivated plants. *Mikrobiologia* 5, 1936 (87-98). [R.e.]
- 631.461 : 581.144.2--Krasilnikov, N. A.; Kriss, A. E.; Litvinov, M. A.** The effect of the root systems on soil micro-organisms. *Mikrobiologia* 5, 1936 (270-286). [R.e.]
- 631.461 : 581.144.2--Starkey, R. L.** Evidences of localization of micro-organisms about plant roots. *J. Bact.* 33, 1937 (77).
- 631.461 : 616.999.99--Maddock, E. C. G.** Further studies on the survival time of the bovine tubercle bacillus in soil, soil and dung, in dung and on grass, with experiments on feeding guinea-pigs and calves on grass artificially infected with bovine tubercle bacilli. *J. Hyg.* 34, 1934 (372-379). [E.S.R. 72 (533).]
- 631.461 : 616.999.99--Rhines, C.** The persistence of avian tubercle bacilli in soil and in association with soil micro-organisms. *J. Bact.* 29, 1935 (299-311).
- 631.461 : 631.414.2--Killinger, G. B.; Smith, F. B.** The importance of soil colloids to soil micro-organisms. *Proc. Iowa Acad. Sci.* 40, 1933 (86). [C.A. 29 (2640).]
- 631.461 : 631.414.3--Novogrudsky, D. M.** Studies on the ability of soils to absorb bacteria. II. The absorption capacity of soils in respect of various micro-organisms and its relation to the pH of the medium. *Mikrobiologia* 5, 1936 (623-644). [R.e.]



# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.461 : 631.414.3** —Peele, T. C. Adsorption of bacteria by soils. *Cornell Agric. Expt. Sta. Mem.* 197, 1936, pp. 18.
- 631.461 : 631.416.2** —Fehér, D. The problem of the microbiological cycle of phosphorus in soil. *Phosphorsäure* 5, 1935 (706-713). G.]
- 631.461 : 631.417** —Jensen, H. L. Contributions to the microbiology of Australian soils. I. Numbers of micro-organisms in soil and their relation to certain external factors. *Proc. Linn. Soc. N.S.W.* 59, 1934 (101-117).
- 631.461 : 631.417** Kubiena, W.; Renn, G. E. Micropedological studies of the influence of different organic compounds upon the microflora of the soil. *Zbl. Bakt.* 91, 1935 (267-292). [E.g.]
- 631.461 : 631.417** —Lwoff, A.; Lederer, E. Soil extract regarded as a growth factor for certain flagellates. *C.R. Soc. Biol. Paris*, 119, 1935 (971-973). C.A. 29 (6992).
- 631.461 : 631.432.2** Thornton, H. G.; Taylor, C. B. Short-period fluctuations in bacterial numbers in soil. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (175-179).
- 631.461 : 631.432.2** —Taylor, C. B. Short-period fluctuations in the numbers of bacterial cells in soil. *Proc. Roy. Soc.* 119B, 1936 (269-295).
- 631.461 : 631.432.2** Fehér, D.; Frank, M. Comparative investigations on the degree of biological activity of soils. *Arch. Mikrobiol.* 8, 1937 (27-40). G.]
- 631.461 : 631.433.2** Hall, I. C. The anaerobic bacteria of the soil—a tillable field. *J. Bact.* 33, 1937 (76-77).
- 631.461 : 631.436** Bryan, C. S. The influence of controlled temperature and soil treatment on some soil bacteria. *Mich. Agric. Expt. Sta. Quart. Bull.* 18, 1935 (106-113).
- 631.461 : 631.436** Itano, A.; Tsuji, Y. Spontaneous studies of soils. II. Influence of temperature on micro-organisms. *Iter. Ohara Inst.* 7, 1936 (409-414). E.]
- 631.461 : 631.436** Itano, A.; Tsuji, Y. Spontaneous studies of soils. II. Influence of temperature on the soil micro-organisms. *J. Sci. Soil Japan* 11, 1937 (37-43). J.e.]
- 631.461 : 631.437** Potter, M. C. Soil micro-organisms: their influence upon the potential difference between the plant and the soil. *Zbl. Bakt.* 90, 1934 (255-258). C.R. 29 (539). G.]
- 631.461 : 631.445** —Manzon, V. D. Microbiological characteristics of soils of the sugar beet regions of U.S.S.R. *Shorn. Rab. VNIS*, 1936 (51-53). R.]
- 631.461 : 631.452** —Lipman, J. G.; Starkey, R. L. Broad relationships between micro-organisms and soil fertility. *N.J. Agric. Expt. Sta. Bull.* 595, 1935, pp. 32. B.C.A. 55 (292).
- 631.461 : 631.452** —Lipman, J. G. Broad relationships between micro-organisms and soil fertility. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (29-44).
- 631.461 : 631.452** —Fehér, D. The character and significance to the practical farmer of biological activity in cultivated soil. *Landwirtsch.-Tagung, Bratislava 1937* (28-43). G.]
- 631.461 : 631.466.1** —Khudiakov, I. P. The lytic action of soil bacteria on parasitic fungi. *Mikrobiologiya* 4, 1935 (193-204). K.A.M. 15 (81).

## FERTILIZERS AND GENERAL AGRONOMY

**631.461 : 631.472—Wilson, J. K.** The number of colonies on plaques of soil made from samples taken from various horizons. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (205-209).

**631.461 : 631.51—Luchetti, G.** The variations in the microbiological state of the soil under cultivation without turning the sod (Del Pelo Pardi system). *Ist. Agrar. Pisa Boll.* 10, 1934 (251). P.I.S. 10 (179).

**631.461 : 631.51—Mishustin, E. N.** Thermophilic bacteria as indicators of soil condition. *Khim. Sotsial. Zemed.* No. 7, 1935 (55-60). [R.]

**631.461 : 631.51—Korneeva, N. P.** Biological processes and the physical conditions of plough land. *Sborn. Rab. VNIS*, 1936 (541-552). [R.]

**631.461 : 631.51—Fehér, D.; Manninger, C. A.; Frank, M.** Cultivated soil as a biodynamic system. *Bodenk. Pflernähr.* 4, 1937 (243-276). [G.]

**631.461 : 631.58—Truffaut, G.** The influence of cropping and antiseptics on the micro-population of soils. *Cong. Chim. Indust.* 14th Cong. Paris 1934, pp. 5. [F.]

**631.461 : 631.67—Burakova, V. V.; Korsakova, M. P.** Microbiological investigation of a mineral soil of the Soviet farm, "Industry". *Trudy LOMU.A.I* No. 37 (No. 1), 1935 (193-208). *Pedology* 1936 (930). [R.]

**631.461 : 631.81—Adalta, M.** Microbiological investigations of fertilizer experiments. *J. Soc. Trop. Agric. Taiwan*, 6, 1934 (525). Z.P.D. 42 (116).

**631.461 : 631.81—Yermolaeva.** The influence of high dosage of fertilizers on biological processes in soil. *Trudy Inst. Konopl* No. 3, 1934 (126-138). *Pedology* 1936 (926). [R.]

**631.461 : 631.81—Engel, H.** Does the customary treatment with complete mineral fertilizers influence the activity of micro-organisms in the soil? *Zbl. Bakt.* 92, 1935 (490-505). B.C.A. 55 (115).

**631.461 : 631.81—Singh, J.** Studies in soil bacteria of the sub-tropical region—Punjab, North India. *Proc. Indian Acad. Sci.* 6, 1937 (121-129).

**631.461 : 631.821.1—Baren, H. van.** The influence of lime on the development and activity of soil micro-organisms. *Landbouwk. Tijdschr.* 45, 1933 (316). Z.P.D. 37 (371).

**631.461 : 631.86—King, C. J.; Hope, C.; Eaton, E. D.** Some microbiological activities affected in manurial control of cotton root rot. *J. Agric. Res.* 49, 1934 (1093-1107).

**631.461 : 631.87—Vandecaveye, S. C.; Allen, M. C.** Microbial activities in soil: II. Activity of specific groups of microbes in relation to organic matter transformation in Palouse silt loam. *Soil Sci.* 40, 1935 (331-343).

**631.461 : 631.87—Schmalfuss, K.** The effect of organic manuring and mineral fertilizing on the fertility status and biological activity of the soil. *Bodenk. Pflernähr.* 3, 1937 (202-210). [G.]

**631.461 : 632—Hino, I.** Antagonistic action of soil microbes with special reference to plant hygiene. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (173-174).

**631.461 : 633—Manzon, V. D.** The effect of the higher plants on soil microflora. *Sborn. Rab. VNIS*, 1936 (559-560). [R.]

# BIBLIOGRAPHY OF SOIL SCIENCE

**631.461 : 633.72**—Itano, A.; Tsuji, Y. Microbiological investigation on tea. II. Influence of tea extract on the soil micro-organisms. *Ber. Ohara Inst.* 7, 1937 (491-500). [E.]

**631.461.005**—Molotivsky, G. Kh. A new type of soil chamber for studying soil microflora. *Bull. Acad. Sci. (U.S.S.R.)* No. 8, 1935 (1117-1121). [R.g.]

**631.461.1.3**—Bouyoucos, G. J. A method for determining the degree of decomposition that unknown decayed vegetable organic matter has already undergone in nature. *Soil Sci.* 38, 1934 (477-482).

**631.461.1.3**—Barthel, C. Mobilization of plant nutrients in the soil. *Trans. 3rd Int. Cong. Soil Sci.* 2, 1935 (75-81). [E.]

**631.461.1.3**—Bell, C. E. Decomposition of organic matter in Norfolk sand: the effect upon soil and drainage water. *J. Amer. Soc. Agron.* 27, 1935 (934-946).

**631.461.1.3**—Kinzerskaia, K. N. The processes of fixation of the products of decomposition of organic matter in soil. Parts I, II. *Trudy Lening. A.I. No. 37* (No. 1), 1935 (76-121) (123-142). *Pedology* 1936 (928-929). [R.]

\* **631.461.1.3**—Richards, E. H.; Shrikhande, J. G. The preferential utilization of different forms of inorganic nitrogen in the decomposition of plant materials. *Soil Sci.* 39, 1935 (1-8).

**631.461.1.3**—Bengtsson, N. Decomposition of cellulose, pentosans and lignin in soil. Experiments on barley stubbles and roots in sand. *Lantbrukshögsk. Ann.* 3, 1936 (1-48). [Sw.]

**631.461.1.3**—Pistsov, P. Methods for the determination of the dynamics of the decomposition of organic matter in the soil. *Khim. Sel'sk. Zemled.* No. 6, 1936 (108-110). [R.]

**631.461.1.3**—Ruschmann, G. The decomposition of plant and animal residues in soils, farmyard manure and compost. *Forsch. Dienst.* 2, 1936 (245-258). [G.]

**631.461.1.3**—Dhar, N. R. Nitrogen transformation in the soil. *Nat. Acad. Sci. India, Presidential Address*, 1937, pp. 82.

**631.461.1.3**—Waksman, S. A.; Hutchings, I. J. Associative and antagonistic effects of microorganisms: III. Associative and antagonistic relationships in the decomposition of plant residues. *Soil Sci.* 43, 1937 (77-92).

**631.461.1.3 : 547.458.84**—Waksman, S. A.; Smith, H. W. Transformation of the methoxyl group in lignin in the process of decomposition of organic residues by micro-organisms. *J. Amer. Chem. Soc.* 56, 1934 (1225). [U.S.] 10 (131).

**631.461.1.3 : 547.458.84**—Smith, F. B.; Brown, P. E. The decomposition of lignin and other organic constituents by certain soil fungi. *J. Amer. Soc. Agron.* 27, 1935 (109-119).

**631.461.1.3 : 547.458.84**—Norman, A. G. The decomposition of lignin in plant materials. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (105-108).

**631.461.1.3 : 547.458.84**—Waksman, S. A.; Hutchings, I. J. Decomposition of lignin by microorganisms. *Soil Sci.* 42, 1936 (119-130).

\* **631.461.1.3 : 547.458.84**—Olson, F. R.; Peterson, W. H.; Sherrard, E. C. Effect of lignin on fermentation of cellulosic materials. *Indust. Engng. Chem.* 29, 1937 (1026-1029).

# FERTILIZERS AND GENERAL AGRONOMY

**631.461.1/3 : 631.433—Shrikhande, J. G.** The production of mucus during the decomposition of plant materials. III. The effect of partially aerobic and anaerobic conditions. *Biochem. J.* 30, 1936 (1789-1794).

**631.461.1/3 : 631.433.2—Acharya, C. N.** Studies on the anaerobic decomposition of plant materials. I. The anaerobic decomposition of rice straw (*Oryza sativa*). *Biochem. J.* 29, 1935 (528-541).

**631.461.1/3 : 631.436—Roshkovskaia, M. I.** Decomposition of organic matter in soil under different moisture and temperature conditions. *Trudy Leningradsk. gos. univ.* No. 37 (No. 1), 1935 (67-75). *Pedology* 1936 (928). — R.

**631.461.1/3 : 664.15—Bhaskaran, T. R.** Investigations on the rôle of organic matter in plant nutrition. Part 12. Production of organic acids during decomposition of cane molasses in the swamp soil. *Proc. Indian Acad. Sci.* 3 B, 1936 (320-327).

**631.461.1—Tiagny-Riadno, M. G.** Ammonification in soils and Bmycondes. *Trudy Nauch. Inst. Udob.* No. 108, 1933 (143-170). *C.A.* 29 (1556).

**631.461.1—Gibson, T.** An investigation of the *Bacillus Pasteuri* group. I. Description of the strains isolated from soils and manures. *J. Bact.* 28, 1934 (295-308).

**631.461.1—Gibson, T.** The urea-decomposing microflora of soils. II. The numbers and types of the organisms as shown by different methods. *Zbl. Bakt.* II, 92, 1935 (414-424). — E.

**631.461.2—Corbet, A. S.** The formation of hyponitrous acid as an intermediate compound in the biological or photochemical oxidation of ammonia to nitrous acid. I. Chemical reactions. *Biochem. J.* 28, 1934 (1575-1582).

**631.461.2—Corbet, A. S.** The formation of hyponitrous acid as an intermediate compound in the biological or photochemical oxidation of ammonia to nitrous acid. II. Microbiological oxidation. *Biochem. J.* 29, 1935 (1086-1096).

**631.461.2—Walker, R. H. ; Klingebiel, A. A. ; Greiner, L. M.** The numbers of Nitrosomonas in some variously treated Iowa soils. *Proc. Iowa Acad. Sci.* 42, 1935 (89). *C.A.* 30 (8470).

**631.461.2—Crump, L. M.** The formation of nitrite by heterotrophic bacteria from soil. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (103-104).

**631.461.3—Luchetti, G.** The determination of the nitrification power of soils. *Boll. Soc. Int. Microbiol. Sci. Ital.* 6, 1934 (263). *Z.P.D.* 43 (242). — F.

**631.461.3—Brioux, C. ; Jouis, E.** Nitrification in plateau silt soils. *Ann. Agron.* 5 (n.s.), 1935 (622-631). — F.

**631.461.3—Cutler, D. W. ; Crump, L. M.** Nitrification by micro-organisms other than Nitrosomonas. *Ann. Appl. Biol.* 22, 1935 (415-416).

**631.461.3—Eggleston, W. G. E.** The nitrification of ammonia in the field and in laboratory incubation experiments. *Ann. Appl. Biol.* 22, 1935 (419-430). *Herb. Abs.* 5 (199).

**631.461.3—Rossi, G. de.** Chemical nitrification in soil. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (135-137).

**631.461.3—Winogradsky, H.** On the number and variety of nitrifying organisms. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (138-140).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.461.3:631.415.1**—Pandalai, K. M. A new aspect of the mechanism of nitrification in soil. *Proc. Nat. Inst. Sci. India* 3, 1937 (175-184).
- 631.461.3:535.21**—Sudan Government Chemical Section Publication, 1934. Nitrification and soil nitrogen. Sudan Govt. Chem. Sect. Pub. 68, 1934 (12-13).
- 631.461.3:535.21**—Corbet, A. S. The biological and chemical oxidation of ammonia to nitric acid. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (133, 134).
- 631.461.3:535.21**—Corbet, A. S. Recent work on the biological and chemical aspect of nitrification. *Ann. Appl. Biol.* 22, 1935 (416-419).
- 631.461.3:535.21**—Dhar, N. R. Chemical aspects of biological oxidations. *J. Indian Chem. Soc.* 12, 1935 (96-130).
- 631.461.3:535.21**—Fraps, G. S.; Sterges, A. J. Effect of sunlight on the nitrification of ammonium salts in soils. *Soil Sci.* 39, 1935 (85-94). *Jealott's Hill Bull.* 4 (141).
- 631.461.3:535.21**—Desai, S. V.; Fazal-Ud-Din. On the nature of nitrification in soil. *Indian J. Agric. Sci.* 6, 1936 (777-783).
- 631.461.3:535.21**—Dhar, N. R.; Tandon, S. P. Oxidation of nitrites to nitrates in sunlight. *J. Indian Chem. Soc.* 13, 1936 (180-184).
- 631.461.3:535.21**—Joshi, N. V.; Biswas, S. G. Does photo-nitrification occur in soils? *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (104).
- 631.461.3:535.21**—Osugi, S.; Aoki, M. On the photo-oxidation of ammonium compounds in solution and soil. *J. Sci. Soil Japan* 10, 1936 (11-24). [Jap.]
- 631.461.3:546.27**—Verona, O. The influence of boron on nitrification. *Boll. Soc. Int. Microbiol. Sez. Ital.* 9, 1937 (65-66). C.A. 31 (6391).
- 631.461.3:547.457.1**—Engel, H. Physiology of nitrifying organisms in natural soils. II. Influence of glucose on nitrification. *Zbl. Bakt.* 11, 90, 1934 (385-397). B.C.A. 54 (372). G.
- 631.461.3:631.411.4**—Swietochowski, B. Formation of nitrates on wild and cultivated peat moors. *Rev. Nauch. Robn.* 33, 1934 (34-47). [Polg.]
- 631.461.3:631.415.1**—Brioux, C.; Jouls, F. Nitrification on silty soils of the plateau of the Pays de Caux. *Ann. Agron.* 5 (n.s.), 1935 (622-631). B.C.A. 55 (340). F.
- 631.461.3:631.415.2**—Alicante, M. M. Nitrification in acid soils. *Philipp. J. Sci.* 58, 1935 (163-169). B.C.A. 55 (339).
- 631.461.3:631.415.2**—Turchin, F. V. Decomposition of nitrite in soils unsaturated with bases and the problem of nitrification. *Ztschr. Pflanz. Dung.* 43, 1936 (170-186). G.
- 631.461.3:631.415.3**—Danini, E. M.; Kosmortov, V. A. On the course of nitrification process in alkali soils. *Mikrobiologia* 2, 1933 (88-91). E.S.R. 71 (601). [Rg.]
- 631.461.3:631.417**—Pandalai, K. M. Nitrification in presence of organic matter. *Science* 84, 1936 (440-441). C.A. 31 (797). B.C.A. 56 (164).
- 631.461.3:631.417.4**—Scheffer, F.; Karapurkar, Y. M. Dependence of nitrification on the nature and rate of decomposition of organic materials. *Kuhn-Arch.* 37, 1934 (143-172). B.C.A. 54 (866).

# FERTILIZERS AND GENERAL AGRONOMY

- 631.461.3 : 631.417.4**—Stephenson, R. E. The nitrification process and plant nutrition. *Soil Sci.* 41, 1936 (187-196).
- 631.461.3 : 631.434**—Henckel, P. A.; Butylin, E. I. The process of nitrification according to Waksman's method in soil samples with undisturbed structure. *Mikrobiologia* 4, 1935 (364-371). [Re.]
- 631.461.3 : 631.472**—Schonberg, C.—Comparative nitrification of the nitrogen of the soil and subsoil. *Rech. Fert. Sta. Agron. Douai*, 1934, 1935 (46-47). C.A. 29 (6996).
- 631.461.3 : 631.81**—Dean, H. L.; Smith, F. B. The effect of lime and phosphate on nitrification in an acid soil. *Proc. Iowa Acad. Sci.* 40, 1933 (84-85). C.A. 29 (2643).
- 631.461.3 : 631.81**—Smith, F. B.; Hartzell, C. D. Some effects of fertilization on nitrification in high-lime soils. *Proc. Iowa Acad. Sci.* 40, 1933 (85). C.A. 29 (2642).
- 631.461.3 : 631.821.1**—Walker, R. H.; Brown, P. E. Nitrification in the Grundy silt loam as influenced by liming. *J. Amer. Soc. Agron.* 27, 1935 (356-363).
- 631.461.3 : 631.821.1**—Sauerlandt, W. Investigations on nitrate formation and the decomposition of phosphoric acid under the influence of liming and the lime content of soils. *Ztschr. Pflanz. Dung.* 45, 1936 (129-153). G.
- 631.461.3 : 631.821.1**—Walker, R. H.; Thorne, D. W.; Brown, P. E. The numbers of ammonia-oxidizing organisms in soils as influenced by soil management practices. *J. Amer. Soc. Agron.* 29, 1937 (854-864).
- 631.461.3 : 631.83**—Protasov, P. V. The influence of K on the mobility of  $P_2O_5$  in soils and the process of nitrification. *Bull. Sov. NIKH.* 4, 1936 (2-21). [Re.]
- 631.461.3 : 631.841.5**—Borodulina, Y. S. The influence of calcium cyanamide on nitrification in podzol soils. *Trudy Nauch. Inst. Udob.* No. 108, 1933 (79-92). C.A. 29 (1560).
- 631.461.4**—Litvinova, E. V. Denitrification in podzol soils. *Trudy Nauch. Inst. Udob.* No. 108, 1933 (71-78). C.A. 29 (1560).
- 631.461.4**—Meiklejohn, J. The reduction of nitrate by individual strains of free-living bacteria. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (180-183).
- 631.461.4 : 535.21**—Dhar, N. R. Denitrification in sunlight. *Nature* 134, 1934 (572-573). C.A. 29 (269).
- 631.461.4 : 535.21**—Dhar, N. R.; Tandon, S. P.; Mukherji, S. K. Denitrification in sunlight and its retardation. *J. Indian Chem. Soc.* 12, 1935 (67-81).
- 631.461.4 : 535.21**—Dhar, N. R.; Mukherji, S. K. Denitrification in sunlight and its retardation. II. *J. Indian Chem. Soc.* 12, 1935 (756-763).
- 631.461.4 : 535.21**—Dhar, N. R.; Mukherji, S. K. Denitrification in sunlight and its retardation. III. *J. Indian Chem. Soc.* 13, 1936 (555-562). B.C.A. 56 (269).
- 631.461.4 : 535.21**—Gopala Rao, G.; Murty, K. S. Photocatalytic reduction of nitrate and the simultaneous oxidation of ammonia to nitrite. *Proc. Nat. Inst. Sci. India* 3, 1937 (1331-1337).
- 631.461.4 : 631.433.2**—De, P. K.; Sarkar, S. N. Transformation of nitrate in water-logged soils. *Soil Sci.* 42, 1936 (143-155).

# BIBLIOGRAPHY OF SOIL SCIENCE

**631.461.5—Menchikovsky, F.** Note on the fixation of nitrogen in local sandy soil by symbiosis between *Azotobacter*, *Oscillaria* and *Gleocapsa*. *Hadar* 6, 1933, pp. 4.

**631.461.5—Bhaskaran, T. R.; Subrahmanyam, V.** Aspects of the mechanism of non-symbiotic fixation of atmospheric nitrogen. *Curr. Sci.* 4, 1935 (234-235). C.A. 30 (3146).

**631.461.5—Bhaskaran, T. R.; Subrahmanyam, V.** Some new aspects of nitrogen fixation in the soil. *Curr. Sci.* 5, 1936 (78-79).

**631.461.5—Bhaskaran, T. R.; Subrahmanyam, V.** Studies on the mechanism of biological nitrogen fixation. Part IV. Nitrogen fixation by the mixed microflora of the soil in presence of the acid products of anaerobic decomposition of carbohydrates. *Proc. Indian Acad. Sci.* 4, 1936 (163-170).

**631.461.5—Bhaskaran, T. R.; Subrahmanyam, V.** Some new aspects of the mechanism of nitrogen fixation in the soil. *Proc. Nat. Inst. Sci. India* 3, 1937 (163-174).

**631.461.5—Reuszer, H. W.** Nitrogen transformations in certain Colorado soils. *J. Bact.* 33, 1937 (82).

**631.461.5:535.21 Dhar, N. R.; Mukherji, S. K.** Are the Indian soils becoming less productive? *Proc. Soc. Biol. Chem. India* 1, 1936 (36).

**631.461.5:535.21 Dhar, N. R.; Mukherji, S. K.** Nitrogen fixation and conservation in soil. *J. Indian Chem. Soc.* 13, 1936 (155-179). B.C.A. 55 (707).

**631.461.5:535.21 Dhar, N. R.; Mukherji, S. K.** Nitrogen fixation in soil with cellulose substances, cow dung and fats. Part I. *Proc. Nat. Inst. Sci. India* 6, 1936 (289-295).

**631.461.5:535.21 Dhar, N. R.; Seshacharyulu, E. V.** Nitrogen fixation and *azotobacter* count on application of sugars to soil. II. *Proc. Nat. Inst. Sci. India* 6, 1936 (244-251). B.C.A. 56 (73).

**631.461.5:631.415.2—Willis, H. H.** Metabolism of some nitrogen-fixing clostridia. *Ann. Agr. Expt. Sta. Res. Bull.* 173, 1934 (255-284). C.A. 28 (7998).

**631.461.5:631.415.3 Prettenhoffer, I.** Nitrogen fixation and nitrification in untreated and reclaimed alkali soils. II. Fixation of the nitrogen of the air. *Közi. Közl.* 37, 1931 (38-44). C.A. 29 (1921).

**631.461.5:631.416.7 Bhaskaran, T. R.** Studies on the mechanism of biological nitrogen fixation. Part II. Role of lime in the fixation of nitrogen by the mixed flora of the soil. *Proc. Indian Acad. Sci.* 3, 1936 (151-156).

**631.461.5:631.417—Bhaskaran, T. R.; Subrahmanyam, V.** Studies on the mechanism of biological nitrogen fixation. Part I. Economy of carbon during fixation of nitrogen by the mixed flora of the soil. *Proc. Indian Acad. Sci.* 3, 1936 (143-150).

**631.461.5:631.445.7 Dhar, N. R.; Mukherji, S. K.** Some aspects of nitrogen fixation in soil. *Proc. Acad. Sci. U.P. India* 4, 1935 (330-341).

**631.461.5:631.81—Lochhead, A. G.; Thexton, R. H.** A four-year quantitative study of nitrogen-fixing bacteria in soils of different fertilizer treatment. *Canad. J. Res.* 14, 1936 (166-177).

# FERTILIZERS AND GENERAL AGRONOMY

- 631.461.5 : 664.15** Dhar, N. R. ; Mukherji, S. K. ; Kar, P. K. Nitrogen fixation in soils on the application of molasses. *Proc. Acad. Sci. U.P. India* 4, 1934 (175-178).
- 631.461.5 : 664.15**—Dhar, N. R. ; Mukherji, S. K. Further experiments on the fixation of atmospheric nitrogen in the soil and the utilization of molasses as a fertilizer. *Proc. Acad. Sci. U.P. India* 5, 1935 (61-70).
- 631.461.5 : 664.15** Dhar, N. R. ; Seshacharyulu, E. V. Nitrogen fixation and azotobacter count on the application of molasses and sugars to the soil in fields. Pt. I. *Proc. Nat. Acad. Sci. India* 6, 1936 (99-109).
- 631.461.5 : 664.15**—Nature. Molasses, nitrogen fixation and land reclamation. *Nature* 137, 1936 (629).
- 631.461.5 : 664.15** Dhar, N. R. ; Mukherji, S. K. ; Seshacharyulu, E. V. *et al.* Nitrogen transformations in the soil. *Proc. Nat. Inst. Sci. India* 3, 1937 (75-131).
- 631.461.51** Dianova, E. ; Voroshilova, A. Absence or inactivity of Azotobacter in the soil. *Mikrobiologia* 2, 1933 (128-138) E.S.R. 71-5986. R.C.
- 631.461.51** Ungerer, E. The origin of a pigment of azotobacter chroococcum. *Ztsch. Pflanz. Zucht.* 36A, 1934 (287-290). G.
- 631.461.51** Wenzl, A. The growth limit of Azotobacter chroococcum in the alkaline range. *Arch. Mikrobiol.* 5, 1934 (358). Z.P.D. 38-187.
- 631.461.51** Beck, A. B. Notes on the occurrence of Azotobacter in some South Australian soils. *Aust. J. Expt. Biol.* 13, 1935 (127-131).
- 631.461.51** Martin, W. P. ; Walker, R. H. Preliminary investigation of the occurrence and distribution of Azotobacter in the soils of Iowa. *Proc. Iowa Acad. Sci.* 42, 1935 (55-61). C.A. 30 (8469).
- 631.461.51** Shelumova, A. ; Menkina, R. The higher plants as a source of carbonaceous nutrition for Azotobacter. *Trans. Int. Soc. Soil Sci. Soviet Sci.* 1, 1935 (135-145).
- 631.461.51** Verona, O. Two new species of red pigmented Torulopsis, isolated from the soil. *Arch. Protistenk.* 85, 1935 (312-318). *Bull. Inst. Bot.* 35-4596.
- 631.461.51** Winogradsky, S. The method in soil microbiology as illustrated by studies on Azotobacter and the nitrifying organisms. *Soil Sci.* 40, 1935 (59-76).
- 631.461.51** Bhaskaran, T. R. Economy of carbon during fixation of nitrogen by Azotobacter chroococcum. *Proc. Soc. Biol. Chem. India* 1, 1936 (6).
- 631.461.51** Bhaskaran, T. R. The mechanism of non-symbiotic fixation in the soil. *Proc. Soc. Biol. Chem. India* 1, 1936 (14-16).
- 631.461.51** Bhaskaran, T. R. Studies on the mechanism of biological nitrogen fixation by Azotobacter chroococcum Beij. *Proc. Indian Acad. Sci.* 4, 1936 (67-74).
- 631.461.51** Guittoneau, G. ; Chevalier, R. The utilization of salicylic acid by soil azotobacter as an energizing nutrient. *C.R.* 203, 1936 (211-213). [F.]



# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.461.51** Batchelor, H. W. Some factors affecting the preparation and use of silica-gel media for the growth of non-symbiotic nitrogen-fixing bacteria. *Sci. Proc. 38th Ann. Meets. Soc. Amer. Bact.* 1936. Abs. in *J. Bact.* 33, 1937 (83).
- 631.461.51**—Martin, W. P.; Walker, R. H.; Brown, P. E. The occurrence of azotobacter in Iowa soils and factors affecting their distribution. *Iowa Agric. Expt. Sta. Res. Bull.* 217, 1937 (227-256).
- 631.461.51**: **546.22**—Greaves, J. E.; Anderson, A. Sulfur requirements of *Azotobacter chroococcum*. *Soil Sci.* 41, 1936 (197-201).
- 631.461.51**: **546.77**—Niel, C. B. van. A note on the apparent absence of *Azotobacter* in soils. *Arch. Mikrobiol.* 6, 1935 (215-218). *Zbl. Bakt.* 94 (281).
- 631.461.51**: **546.77** Burk, D.; Horner, C. K. The rôle of traces of molybdenum in the physiology and agrobiolgy of *Azotobacter*. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (213-214).
- 631.461.51**: **546.77**: **546.72**—Krzemieniewski, S.; Kovats, J. The influence of iron and molybdenum on nitrogen fixation by *Azotobacter chroococcum* Beij. *Bull. Int. Acad. Polon.* 1936, 119, No. 8-10, 1937 (169-195). *C.A.* 31 (4436). G.
- 631.461.51**: **546.77**: **546.881**—Horner, C. K.; Burk, D. The specific catalytic rôle of molybdenum and vanadium in nitrogen fixation and amide utilization by *Azotobacter*. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (152-155).
- 631.461.51**: **546.77**: **546.881** Bortels, H. Further studies on the significance of molybdenum, vanadium, tungsten and other soil materials on nitrogen-fixing and other microorganisms. *Zbl. Bakt.* 95, 1936 (193-218). *C.A.* 31 (542).
- 631.461.51**: **546.77**: **546.881** Bortels, H. The effect of molybdenum and vanadium compounds on the *Azotobacter* compounds of soil. *Arch. Mikrobiol.* 8, 1937 (1-12). *C.A.* 31 (6395).
- 631.461.51**: **547.581.2**—Guiltronneau, G.; Chevallier, R. The sensitivity of soil *Azotobacter* to the molecular structure of mono-benzoic acids. *C.R.* 203, 1936 (1400-1402). F.
- 631.461.51**: **551.58** Stapp, C.; Bortels, H. *Azotobacter* growth and nitrogen fixation in relation to weather. *Zbl. Bakt.* 94, 1936 (497-499). G.
- 631.461.51**: **631.415.1** Burk, D.; Lineweaver, H.; Horner, C. K. The specific influence of acidity on the mechanism of nitrogen fixation by *Azotobacter*. *J. Bact.* 27, 1934 (325-340). E.S.R. 71 (598).
- 631.461.51**: **631.416**—Cox, G. M.; Martin, W. P. Use of a discriminant function for differentiating soils with different azotobacter populations. *Iowa St. Coll. J. Sci.* 11, 1937 (323-332).
- 631.461.51**: **631.416.1** Novogrudsky, D. M. The nitrogen products in cultures of azotobacter and the reciprocal relations of these and other soil bacteria. *Mikrobiologia* 2, 1933 (237). Z.P.D. 38 (186). R.
- 631.461.51**: **631.416.1** Burk, D.; Horner, C. K. The production of ammonia by azotobacter and its relation to the mechanism of nitrogen fixation. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (148-151).
- 631.461.51**: **631.416.1** Burk, D.; Horner, C. K. The origin and significance of ammonia formed by azotobacter. *Soil Sci.* 41, 1936 (81-122).

## FERTILIZERS AND GENERAL AGRONOMY

**631.461.51 : 631.416.13**—**Gainey, P. L.** The tolerance of nitrate by pure cultures of *Azotobacter*. *Soil Sci.* 42, 1936 (445-459).

**631.461.51 : 631.417.4**—**Wilson, P. W.** The carbohydrate-nitrogen relation in symbiotic nitrogen fixation. *Wis. Agric. Expt. Sta. Res. Bull.* 129, 1935, pp. 40.

**631.461.51 : 631.436**—**Singh, J. ; Hussain, A.** Occurrence of azotobacter at high temperatures. *Curr. Sci.* 4, 1935 (235-236). C.A. 30 (2681).

**631.461.51 : 631.436**—**Dhar, N. R. ; Tandon, S. P.** Influence of temperature on nitrogen fixation by bacteria. *Proc. Nat. Acad. Sci. India* 6, 1936 (35-39).

**631.461.51 : 631.81**—**Grünwald, O.** Influence of a single heavy application of fertilizers, and of local variations in soil composition on the occurrence and development of *Azotobacter chroococcum*. *Thesis, Munich*, 1933. B.C.A. 54 (967).

**631.461.51 : 631.81**—**Levantivska, B.** The effect of fertilizing and cultivation on the activity of azotobacter under field conditions. *Trb. Landu. Versta. Kiev* 65, 1934 (1-32). *Bied. Zbl.* 6 (574). [R.]

**631.461.51 : 631.811.1**—**Demidenko, T. T. ; Timofeeva, E. F.** *Azotobacter* as a source of nitrogenous nourishment for higher plants. *C.R. Acad. Sci. (U.S.S.R.)* 14, 1937 (205-208). [E.]

**631.461.52**—**Walker, R. H. ; Anderson, D. A. ; Brown, P. E.** Physiological studies on *Rhizobium*. I. The effect of nitrogen source on oxygen consumption by *Rhizobium leguminosarum* Frank. *Soil Sci.* 37, 1934 (387-401). E.S.R. 71 (600).

**631.461.52**—**Barbieri, N. A.** On the so-called fixation of atmospheric nitrogen by the root nodules of Leguminosae. *Bull. Soc. Nat. Hist. Fr. Ser. 6, No. 2*, 1935 (139-144). *Herb. Abs.* 5 (249).

**631.461.52**—**Hoover, S. R. ; Allison, F. E.** A growth and respiration factor for certain *Rhizobia*. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (158-160).

**631.461.52**—**Thornton, H. G.** The symbiotic relationship between soil bacteria and higher plants, as exemplified by the Leguminosae. *Trans. 3rd Int. Cong. Soil Sci.* 2, 1935 (81-94).

**631.461.52**—**Wilson, J. K.** Indigenous species of *Rhizobium* in the Arnot Forest. *J. Amer. Soc. Agron.* 27, 1935 (231-236). E.S.R. 73 (590).

**631.461.52**—**Bond, S. V. ; Wilson, P. W. ; Wagner, F. C.** Influence of host plant on effectiveness of *Rhizobia*. *Abstr. Sci. Proc. 37th Ann. Meet. Soc. Amer. Bact.* 1935, *J. Bact.* 31, 1936 (91-92).

**631.461.52**—**Bushnell, O. A. ; Sarles, W. B. ; Fred, E. B.** Studies on the root nodule bacteria of certain wild leguminous plants of Wisconsin. *Abstr. Sci. Proc. 37th Ann. Meet. Soc. Amer. Bact.* 1935, *J. Bact.* 31, 1936 (93).

**631.461.52**—**Isakova, A. A.** The nature of the action of bacterorhizal micro-organisms on plants. *C.R. Acad. Sci. (U.S.S.R.)* 13 (n.s.), 1936 (429-432). *Herb. Abs.* 7 (223).

**631.461.52**—**Lochhead, A. G. ; Thexton, R. H.** A quantitative study of symbiotic nitrogen-fixing bacteria in soils in relation to crop rotation, season, and fertilizer treatment. *Soils Group Pap. C.S.T.A.*, July, 1936, abs. in *Sci. Agric.* 17, 1937 (461).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.461.52—Palacios, S. J.; Bari, A. The physiology of Indian nodule bacteria. *Proc. Indian Acad. Sci.* 3 B, 1936 (334-360).
- 631.461.52—Wilson, P. W. Mechanism of symbiotic nitrogen fixation. I. The influence of  $pN_2$ . *J. Amer. Chem. Soc.* 58, 1936 (1256-1261).
- 631.461.52—Thorne, D. W.; Brown, P. E. A comparison of the numbers of two species of rhizobium and ammonia-oxidizing organisms in variously treated Iowa soils. *J. Amer. Soc. Agron.* 29, 1937 (877-882).
- 631.461.52—Umbreit, W. W.; Wilson, P. W. Studies in the mechanism of symbiotic nitrogen fixation: hydrogen as a specific inhibitor. *J. Bact.* 33, 1937 (79-80). C.A. 31 (2726).
- 631.461.52: 546.77: 546.881—Bortels, H. The effect of molybdenum and vanadium compounds on Leguminosae. *Arch. Mikrobiol.* 8, 1937 (13-26). C.A. 31 (6395).
- 631.461.52: 576.809.6—Arnaud, C.; Castellani, E. On the bacteriophage of rhizobium radicicola. *Boll. Soc. Ital. Microbiol. Sez. Ital.* 6, 1934 (317-321). EF.
- 631.461.52: 576.809.6—Dufrenoy, J. Bacteriophage in tropical agriculture. *Rev. Bot. Appl.* No. 167, 1935 (497-506). E.S.R. 74 (216).
- 631.461.52: 576.809.6—Vandecaveye, S. C.; Katznelson, H. Bacteriophage as related to the root nodule bacteria of alfalfa. *J. Bact.* 31, 1936 (465-477).
- 631.461.52: 631.413.41 2—Albrecht, W. A.; Horner, G. M. Nitrogen fixation in soybeans as influenced by exchangeable calcium. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (140-144).
- 631.461.52: 631.413.41 2—Horner, G. M. Relation of the degree of base saturation of a colloidal clay by calcium to the growth, nodulation and composition of soybeans. *Missouri Agric. Expt. Sta. Res. Bull.* 232, 1936, pp. 36.
- 631.461.52: 631.416.1—Ludwig, C. A.; Allison, F. E. Experiments on the diffusion of nitrogenous compounds from healthy legume nodules or roots. *Abstr. Sci. Proc. 37th Ann. Meet. Soc. Amer. Bact.* 1935. *J. Bact.* 31, 1936 (93-94).
- 631.461.52: 631.416.1—Virtanen, A. I. Secretion of nitrogen compounds from legume root nodules. *Hgt. Landbr. Handl. Tskö* 1936 (92-98). Sw.]
- 631.461.52: 631.416.1—Virtanen, A. I.; Laine, T.; Hausen, S. v. Excretion of amino acids from the root nodules of leguminous plants. *Nature* 137, 1936 (277).
- 631.461.52: 631.416.1—Virtanen, A. I.; Hausen, S. v.; Laine, T. Investigations on the root nodule bacteria of leguminous plants. XX. Excretion of nitrogen in associated cultures of legumes and non-legumes. *J. Agric. Sci.* 27, 1937 (584-610).
- 631.461.52: 631.416.7—Albrecht, W. A.; McGalla, T. M. Variant forms of rhizobia (root nodule bacteria) in relation to the calcium of the soil. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (217).
- 631.461.52: 631.417.2—Allison, F. E.; Hoover S. R. The response of Rhizobia to natural humic acid. *Soil Sci.* 41, 1936 (333-340).
- 631.461.52: 631.417.2—Allison, F. E.; Hoover, S. R. The stimulation of Rhizobia by natural humic acid. *Abstr. Sci. Proc. 37th Ann. Meet. Soc. Amer. Bact.* 1935. *J. Bact.* 31, 1936 (94-95).

## FERTILIZERS AND GENERAL AGRONOMY

- 631.461.52: 631.417.2**—Hofer, A. W. Numbers of *Rhizobium* in humus cultures. *Abs. Sci. Proc. 37th Ann. Meet. Soc. Amer. Bact.* 1935, *J. Bact.* 31, 1936 (95-96).
- 631.461.52: 631.436**—Vartiavaara, V. The growth of root nodule organisms and inoculated peas at lower temperatures. *Maat. Aikak.* 9, 1937 (97-112). *Herb. Abs.* 7 (223).
- 631.461.52: 631.81**—Duggar, J. F. The effects of inoculation and fertilization of Spanish peanuts on root nodule numbers. *J. Amer. Soc. Agron.* 27, 1935 (128-133).
- 631.461.52: 631.81**—Lochhead, A. G.; Thexton, R. H. Quantitative studies of three species of *Rhizobium* in soils of different fertilizer treatment. *Abs. Sci. Proc. 36th Ann. Meet. Soc. Amer. Bact.* 1935, *J. Bact.* 29, 1935 (77).
- 631.461.52: 631.81**—Mann, H. B. The relation of soil treatment to the nodulation of peanuts. *Soil Sci.* 40, 1935 (423-431).
- 631.461.52: 631.81**—Walker, R. H.; Brown, P. E. The numbers of *Rhizobium meliloti* and *Rhizobium trifolii* in soils as influenced by soil management practices. *J. Amer. Soc. Agron.* 27, 1935 (288-296). *J. Bact.* 29, 1935 (77-78).
- 631.461.52: 631.811.1**—Virtanen, A. I.; Hausen, S. v.; Laine, T. Investigations on the root nodule bacteria of leguminous plants. XIX. Influence of various factors on the excretion of nitrogenous compounds from the nodules. *J. Agric. Sci.* 27, 1937 (332-348).
- 631.461.52: 631.811.4**—McCalla, T. M. Behaviour of legume bacteria (*Rhizobium*) in relation to exchangeable calcium and hydrogen ion concentration of the colloidal fraction of the soil. *Missouri Agric. Expt. Sta. Res. Bull.* 256, 1937, pp. 44.
- 631.461.52: 631.811.9**—Albrecht, W. A.; McCalla, T. M. Adsorbed calcium on colloidal clay and an accessory growth factor in laboratory production of *Rhizobium* cultures. *J. Bact.* 33, 1937 (80-81).
- 631.461.52: 631.811.9**—Clark, D. G. Physiological studies on rhizobium species. *Cornell Agric. Expt. Sta. Mem.* 196, 1936, pp. 30.
- 631.461.52: 631.811.9**—Itano, A.; Matsuura, A. Studies on the nodule bacteria. VIII. Influence of ash content of the nodule on the growth of nodule bacteria with special reference to titanium salts. *J. Sci. Soil Japan* 10, 1936 (63-75). [J.e.]
- 631.461.52: 631.811.9**—Thorne, D. W.; Walker, R. H. Physiological studies on rhizobium: VI. Accessory factors. *Soil Sci.* 42, 1936 (231-239).
- 631.461.52: 631.811.9**—Thorne, D. W.; Walker, R. H. Physiological studies on *Rhizobium*: VII. Some physiological effects of accessory growth factors. *Soil Sci.* 42, 1936 (301-310).
- 631.461.52: 631.811.9**—Link, G. K. K. Role of heteroauxines in legume nodule formation, beneficial host effects of nodules and soil fertility. *Nature* 140, 1937 (507).
- 631.461.52: 631.84**—Allison, F. E.; Ludwig, C. A. The cause of decreased nodule formation on legumes supplied with abundant combined nitrogen. *Soil Sci.* 37, 1934 (431-443). *Herb. Abs.* 5 (4).
- 631.461.52: 631.871**—Demidenko, T. T.; Timofeeva, E. F. The rôle of straw as a source of carbohydrates for nodule bacteria. *C.R. Acad. Sci. (U.S.S.R.)* 14, 1937 (209-212). [E.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.461.52:632.2—Conn, H. J.; Hofer, A. W. Probable relationships of the organisms causing crown gall and legume nodules. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (221).
- 631.461.61—Riccardi, S. Microbiological degradation of cellulose. (Experiments in the field and in the laboratory.) *Ann. Ist. Sup. Agrar. Portici* 5, 1932 (153-173). C.A. 30 (3146). [L.]
- 631.461.61—Sen, H. K.; Das-Gupta, G. C. Cellulose fermenters from horse dung. *J. Indian Chem. Soc.* 11, 1934 (851-861). B.C.A. 54 (372).
- 631.461.61 Itano, A.; Matsuura, A. Thermophilic bacteria, with special reference to cellulose decomposition. I. Distribution of the bacteria in surface soil, on rice straw, and on unhulled rice in different seasons. *Ber. Ohara Inst.* 7, 1936 (157-174). B.C.A. 55 (658).
- 631.461.61 : 631.415.2—Karnicka, H. Cellulose decomposition in acid soils. *Mém. Inst. Nat. Pol. Econ. Rur. Pulawy.* 16, 1935, pp. 48.
- 631.461.61 : 631.415.2—Karnicka, H.; Ziemiańska, J. Cellulose decomposition in acid soils. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (109-111).
- 631.461.62—Patrick, R.; Werkman, C. H. Xylan decomposing bacteria. *Iowa State Coll. J. Sci.* 7, 1933 (407). Z.P.D. 36A (118).
- 631.461.62—Ziemiańska, J. On the decomposition of pentosans by soil and dung micro-organisms. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (167-168).
- 631.461.62—Hassid, W. Z.; Chandler, W. L. The isolation of a new polysaccharide synthesized by a soil microorganism. *J. Biol. Chem.* 117, 1937 (203-207).
- 631.461.71—Fagundes, A. B. A preliminary note on the biological oxidation of sulphur. *Arg. Inst. Biol. Veg.* 1, 1934 (87-89).
- 631.461.71—McGeorge, W. T.; Greene, R. A. Oxidation of sulfur in Arizona soils and its effect on soil properties. *Ariz. Agric. Expt. Sta. Tech. Bull.* 59, 1935 (297-325). C.A. 30 (3562).
- 631.461.71—Starkey, R. L. Isolation of some bacteria which oxidize thiosulphate. *Soil Sci.* 39, 1935 (197-215).
- 631.461.71—Young, J. W. The bacterial reduction of sulphates. *Canad. J. Res.* 14B, 1936 (49-54).
- 631.461.74—Beard, R. J.; Carlson, J. M.; Chambers, R. D. The survival of *Eberthella typhosa* in soil. *J. Bact.* 33, 1937 (74).
- 631.461.74—Gordon, R. E.; Hagan, W. A. The isolation of acid-fast bacteria from soil. *J. Bact.* 33, 1937 (57).
- 631.461.74 Skinner, C. E.; Davis, F. A quantitative determination of chitin destroying micro-organisms in soil. *Ecology* 18, 1937 (391-397).
- 631.461.74—Taylor, C. B.; Lochhead, A. G. A study of *Bacterium globiforme* Conn. in soils differing in fertility. *Canad. J. Res.* 15C, 1937 (340-347).
- 631.462—Senner, A. H. Application of steam in the sterilization of soils. *U.S.D.A. Tech. Bull.* 443, 1934, pp. 19.
- 631.462—Vandevelde, A. J. J. Sterilization of biological powers. V. Sterilization of arable soil. *Bull. Acad. Roy. Belge* 20, 1934 (816-823). B.C.A. 54 (323).

# FERTILIZERS AND GENERAL AGRONOMY

- 631.462—Gerretsen, F. C. The katadyne method for sterile cultures of higher plants. *Planta* 23, 1935 (593-603). [G.]
- 631.462—Newhall, A. G. Theory and practice of soil sterilization. *Agric. Engng.* 16, 1935 (65-70).
- 631.462 : 631.427.4—Mishustin, E. N.; Sharypov, A. O. Diagnosis of the soil response to partial sterilization by the microbiological method. *Khim. Sotsial. Zemled.* No. 5, 1936 (64-72). [R.e.]
- 631.462 : 631.547.2—Lawrence, W. J. C.; Newell, J. Seedling growth in partially sterilized soil. *Sci. Hort.* 4, 1936 (165-177).
- 631.462 : 631.588.1—Blauser, I. P. Soil sterilization by electric heat. *C.R.E.A. News Letter Chicago*, No. 12, 1935 (4-7). E.S.R. 73 (699).
- 631.462 : 631.588.1—Horsfall, J. G. An electric soil pasteurizer. *Farm Res.* 2, 1935 (7). E.S.R. 74 (216).
- 631.462 : 631.588.1—Horsfall, J. G. Pasteurizing soil electrically to control damping off. *N.Y. St. Agric. Expt. Sta. Bull.* 651, 1935, pp. 8. *Hort. Abs.* 5 (87).
- 631.462 : 631.588.1—Newhall, A. G.; Nixon, M. W. Disinfecting soils by electric pasteurization. *Cornell Agric. Expt. Sta. Bull.* 636, 1935, pp. 20. *Hort. Abs.* 6 (42).
- 631.462 : 631.588.1—Rural Electrification. Soil sterilization. *Rur. Electr.* 11, 1935 (85). *Hort. Abs.* 5 (156).
- 631.462 : 631.588.1—Tavernetti, J. R. Characteristics of the resistance type soil sterilizer. *Agric. Engng.* 16, 1935 (271-274). E.S.R. 73 (699).
- 631.462 : 631.588.1—Muyzenberg, E. W. B. v. d.; Rijn, J. J. F. R. v. Soil disinfection by electricity. *Meded. LandbHooesch. Wageningen* 40, No. 4, 1936, pp. 74. [Duc.]
- 631.466.1—Raper, K. B.; Thom, C. The distribution of Dictyostelium and other slime molds in soil. *J. Wash. Acad. Sci.* 22, 1932 (93-96).
- 631.466.1—Vartiavaara, U. Metabolism of soil fungi. *Acta Agraria Fenn.* 32, 1935, pp. 107. *Jahrb. Moork.* 1936 (81). C.A. 30 (1166). [Sw.e.]
- 631.466.1—Burgess, A. On the significance of mycorrhiza. *New Phytol.* 35, 1936 (117-131).
- 631.466.1—Thom, C.; Morrow, M. B. Fungus mycelia in the soil. *J. Bact.* 33, 1937 (77-78).
- 631.466.1 : 581.5—Semb, G. Fungus rings and their influence on soil and vegetation. *Meld. Norges LandbrHvsk.* 16, 1936 (513-530). N.e.
- 631.466.1 : 631.44—Henry, L. K. Mycorrhizae from Pymatung swamp. *Proc. Pa. Acad. Sci.* 8, 1934 (9-16). E.S.R. 74 (761).
- 631.466.1 : 631.445.7—Reinking, O. A. Cyndrocarpon isolations from tropical soils. *Zbl. Bakt.* 94, 1936 (137-142).
- 631.466.1 : 631.461.5—Allison, F. E.; Hoover, S. R.; Morris, H. J. Nitrogen fixation studies with fungi and actinomycetes. *J. Agric. Res.* 49, 1934 (1115-1123).
- 631.466.1 : 631.875—Rayner, M. C. The mycorrhizal habit in relation to forestry. II. Organic composts and the growth of young trees. *Forestry* 10, 1936 (1-21).
- 631.466.2—Nakhimovskaya, M. I. Antagonism between actinomycetes and soil bacteria. *Mikrobiologiya* 6, 1937 (131-157). [R.e.]

## BIBLIOGRAPHY OF SOIL SCIENCE

- 631.466.2**—Singh, J. Soil fungi and actinomycetes in relation to manurial treatment, season, and crop. *Ann. App. Biol.* 24, 1937 (154-168). B.C.A. 56 (954).
- 631.466.3**—Gistle, M. On the importance of the soil algae. *Ernähr. Pflanze* 30, 1934 (413-414). [G.]
- 631.466.3**—Petersen, J. B. Studies on the biology and taxonomy of soil algae. *Dansk. Bot. Ark.* 8, 1935, pp. 183.
- 631.466.3**—Fehér, D. Investigations on the regional distribution of soil algae. *Arch. Mikrobiol.* 7, 1936 (439-476).
- 631.466.3**—Wilson, J. K. Pure cultures of algae from soil. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (211-212).
- 631.466.3 : 535.21**—Fehér, D.; Frank, M. Investigations on the light ecology of soil algae. *Arch. Mikrobiol.* 7, 1936, pp. 31.
- 631.466.3 : 631.44**—Rosell, D. Z.; Argüelles, A. S. Soil types and growth of algae in fish ponds. *Philipp. J. Sci.* 61, 1936 (1-7). B.C.A. 56 (478).
- 631.466.3 : 631.461.5**—Allison, F. E.; Hoover, S. R. Conditions which favour nitrogen fixation by a blue-green alga. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (145-147).
- 631.467 : 550.35**—Müller, K. M. Soil radiation: its influence on the fauna of the soil. *Südend. Forst- u. Jagdzg.* No. 5, 1937 (44-47). C.M.R. No. 14 (5).
- 631.467.1**—Hino, I.; Momiki, H. Active period of soil ciliates in rice straw decoction. *Bull. Miyazaki Coll. Agric. Forestry* No. 3, 1931 (43-47). [E.]
- 631.467.1**—Grandori, R.; Grandori, L. Studies on soil protozoa. *Ann. Ist. Agrar. Milano* 1, 1934 (1-339). Z.P.D. 10 (23). [I.]
- 631.467.1**—Koffmann, M. The microfauna of soil, its relation to other microorganisms and its rôle in microbiological processes in soil. *Arch. Mikrobiol.* 5, 1934 (246-302). *Bied. Zbl.* 5 (405).
- 631.467.1**—Brodsky, A. L. Soil microfauna: an indicator of soil activity. *Trans. Int. Soc. Soil Sci. Soviet Sect. A*, 1935 (110-122).
- 631.468 : 631.434**—Jacot, A. P. Soil structure and soil biology. *Ecology* 17, 1936 (359-379).
- 631.468 : 631.459**—Taylor, W. P. Some animal relations to soils. *Ecology* 16, 1935 (127-136). *Ann. Agron.* 5 (566).
- 631.468 : 632.187**—Heyward, F.; Tissot, A. N. Some changes in the soil fauna associated with forest fires in the longleaf pine. *Ecology* 17, 1936 (659-666).

## 631.47 SURVEYING, MAPPING

- 631.47**—Stremme, H. The relation between soil maps and rural settlement, as illustrated by the Marienburg district. *Planungswiss. Arbeitsg.* No. 3, Dec. 1934. [G.]
- 631.47**—Görz, G. Science and practice in soil assessment. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (276-279). [G.]
- 631.47**—Gray, D. S.; Gaddis, P. L. Considerations for making soil survey work of greater value to farm mortgage investors. *Amer. Soil Surv. Bull.* 16, 1935 (25-32).
- 631.47**—Jarvis, T. D. A rational approach to problems of land settlement and utilization. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (280-283).

## FERTILIZERS AND GENERAL AGRONOMY

- 631.47—Jarvis, T. D.** Soil studies in relation to land utilization research. *Sci. Agric.* 15, 1935 (287-296).
- 631.47—Kellogg, C. E.** A system of land classification. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (283-286).
- 631.47—Marbut, C. F.** Land classification. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (290-292).
- 631.47—Powers, W. L.** Land classification and soil and water surveys. *Agric. Engng.* 16, 1935 (224-226).
- 631.47—Robinson, G. W.** Soil surveys and their applications. *J. Min. Agric.* 42, 1935 (561-570).
- 631.47—Scott, A.** The value of the soil survey. *Sci. Agric.* 15, 1935 (288-306). [F.e.]
- 631.47—Cutler, J. S.; Paschall, A. H.** Physical land inventory for replanning land use. *Amer. Soil Surv. Bull.* 17, 1936 (53-56).
- 631.47—Morgan, M. F.** Limitations of the soil survey data and maps for land use planning. *Amer. Soil Surv. Bull.* 17, 1936 (48-52).
- 631.47—Tavener, L. E.** A method of land classification. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (140-141).
- 631.47—Whitson, A. R.** Some soil conditions and associated factors likely to influence future land use. *Amer. Soil Surv. Bull.* 17, 1936 (57-62).
- 631.47—Robinson, G. W.** The soil survey and advisory work. *Agric. Prog.* 14, 1937 (226-233).
- 631.47—Schoenmann, L. R.** Essential elements in land classification. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (453-454).
- 631.47:33—Barnes, C. P.** The value of economic studies in determining the use capabilities of land classes. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (469-474).
- 631.47:631.43—Rice, T. D.** Physical characteristics of the soil profile as applied to land classification. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (455-458).
- 631.47:633—Kifer, R. S.** The problem area in agricultural research from the standpoint of crop adaptability and land use. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (481-486).
- 631.471—Rosov, N. N.** The principle of soil map colouring. *Pedology* No. 6, 1934 (843-849). [R.e.]
- 631.471—Bjørlykke, K. O.** Mapping soil types in Norway. *Nord. Jordbr.Forsk.* 5-7, 1935 (352-358). [N.]
- 631.471—Ekström, G.** Agrogeological maps in Sweden. *Nord. Jordbr.Forsk.* 5-7, 1935 (361-372). [Sw.]
- 631.471—Jones, G. H.** Gethin. Method of recording soil survey samples in Kenya. *Proc. 2nd Conf. E. Afric. Agric. Chem.* 1934. Abs. 10, 1935 (57-58).
- 631.471—Känivets, I. I.** Methods of procedure in drawing up agro-chemical maps for the sugar-beet culture regions of the U.S.S.R. *Trans. Int. Soc. Soil Sci. Soviet Sect. A*, 1935 (151-155).
- 631.471—Karpinsky, N. P.; Naidin, P. G.** Methods of procedure in drawing up an agro-chemical map of the districts of fertilizer application, and the main results of the work. *Trans. Int. Soc. Soil Sci. Soviet Sect. A*, 1935 (146-150).
- 631.471—Milne, G.** Composite units for the mapping of complex soil associations. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (345-347).



# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.471—Milne, G., et al.** A provisional soil map of East Africa (Kenya, Uganda, Tanganyika and Zanzibar). *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (266-270).
- 631.471—Prasolov, L. I.** The contents of small scale soil maps. *Pedology* No. 4, 1935 (474-480). [R.]
- 631.471—Sekera, F.** Agricultural soil maps as aids in fertilizer recommendations. *Phosphorsäure* 5, 1935 (147-173).
- 631.471—Sigmond, A. A. J. de.** The practical use of my general soil system. *Trans. Int. Cong. Soil Sci.* 1, 1935 (334-338).
- 631.471—Storie, R. E.** A comprehensive legend for soil maps. *Amer. Soil Surv. Bull.* 17, 1936 (109-111).
- 631.471—Nikiforoff, C. C.** Method of recording soil data. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (307-317).
- 631.471—Ráth, A.** A new method of mapping practical soil characteristics. *Mezőg. Kutat.* 10, 1937 (169-174). H.e.
- 631.471 : 625.7:8—Eno, F. H.** Soil surveys for highways. *Ohio Engng. Expt. Sta. Circ.* 33, 1936, pp. 36.
- 631.471 : 631.427.3—Dingwall, A.** Soil survey by plant analysis. *Sci. Agric.* 15, 1935 (279). J.H.B. 4 (177).
- 631.471 : 631.459—Fuller, G. L.** Procedure for making soil conservation surveys. *U.S.D.A. Soil Conserv.* 1936, Outline 4, pp. 32. E.S.R. 76 (700).
- 631.471 : 631.472—Laatsch, W.** Profile diagrams as standards for the control of soil survey and evaluation. *Ernähr. Pflanze* 31, 1935 (41-44). G.e.
- 631.471 : 631.61—Lorke, B.** A soil map for "Kulturtechnik" purposes. *Kulturtech.* 38, 1936 (346-356).
- 631.471 : 631.67—Kachinsky, N. A.** The principles of soil reclamation mapping for irrigation purposes. *Pedology* No. 6, 1937 (918-931). R.g.
- 631.471 : 633.63—Kanivets, I. I.** Methods of compiling soil-agrochemical maps of the sugar beet regions. *Sborn. Rab. VNIS*, 1936 (12-15). R.
- 631.471 : 633.63—Kanivets, I. I. ; Samburov, B. I.** Methods for agro-soil studies on sugar-beet sovkhozes. *Sborn. Rab. VNIS*, 1936 (95-112). R.
- 631.471 : 778.35—Bourne, R.** Aerial photographs of rural areas. *J. Min. Agric.* 43, 1937 (929-931).
- 631.471 : 778.35—Wright, M. S.** The application of aerial photography to land use problems. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (357-360).
- 631.472 : 631.415.1—Pankakosi, A.** Vertical variations in the reaction of the surface layers of moor and forest soils. *Ann. Bot. Fennica* 6, No. 7, 1935 (6-18). G.]
- 631.472 : 631.452—Sabinin, D. A. ; Baslavskaya, S. S. ; Prozorovskaya, A. A.** The methods of determining the rôle of the horizons of the soil profile in plant nutrition. *Trudy Nauch. Inst. Udob.* No. 130, 1936 (57-63). R.g.
- 631.472 : 631.452—Ganzh, B.** The fertility of different horizons of chernozem and podzolized soils. *Trans. Dokuchaev Inst.* 14, 1937 (47-98). [R.e.]
- 631.472 : 631.452—Kirsanov, A. T.** The agrochemical characteristics of the arable layer and the underlying horizons of podzol soils. *Trans. Dokuchaev Inst.* 14, 1937 (5-29). [R.e.]

## FERTILIZERS AND GENERAL AGRONOMY

**631.472 : 631.452**—Kirsanov, A. T. Assimilation of  $P_2O_5$  by plants in different horizons of ordinary chernozem. *Trans. Dokuchaev Inst.* 14, 1937 (31-46). [R.]

**631.472 : 631.811**—Whitfield, B. W. Soil profile in relation to yield. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (253-255).

**631.472 : 631.811**—Crowther, E. M. Subsoil structure and crop nutrition. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (126-129).

**631.472.005**—Mischenko, N. F. Methods of fixation and porosity determination in the study of soil mechanics. *Agric. Engng.* 18, 1935 (23-29).

**631.472.005**—Rybakov, M. M. Apparatus for taking monolith soil samples. *Trans. Soviet Sect. Int. Soc. Soil Sci.* Vol. 5, 1936 (439-445). [R.]

**631.472.005**—Voigt, E. A new method of conserving soil profiles. *Ztschr. Pflanz. Düng.* 45, 1936 (111-115). [G.]

**631.472.005**—Grosskopf, W. The soil film. An application of the lachrim method to obtain profiles of tropical forest soils while preserving the natural structure. *Ztschr. Weltforstw.* 4, 1937 (331-332). [G.e.]

## 631.48 SOIL FORMATION

**631.48 : 551.41**—H'in, R. S. The fundamental regularity of the distribution of rocks and soils according to the relief (age) in sculptured valleys. *Pedology* No. 4, 1936 (588-601). [R.e.]

**631.48 : 551.41**—Marschner, F. J. Land relief. *U.S.D.A. Atlas Amer. Agric.* 1936, pp. 6. E.S.R. 75 (749).

**631.48 : 551.58**—Gillman, C. A geographer's hints to pedologists. *Proc. 2nd Conf. E. Afric. Agric. Chem.* 1934, Abs. 6, 1935 (52-53).

**631.48 : 553.492.1**—Sagui, C. L. Genesis of bauxites. *Bull. Assoc. Franc. Ét. Sol* 3, 1937 (36-40).

**631.48 : 631.432**—Dosmanova, O. P. Process of glei formation. *Trans. Dokuchaev Inst.* 9, 1934 (161-188). B.C.A. 54 (163).

**631.48 : 631.432**—Joffe, J. S. Soil profile studies: VII. The glei process. *Soil Sci.* 29, 1935 (391-401).

**631.48 : 631.432**—Smolik, L. Contribution to our knowledge of glei soils. *Sborn. Čsl. Akad. Zemd.* 10, 1935 (403-408). [C.e.]

**631.48 : 631.432**—Petlíček, J. The chemical composition of the iron- and manganese-containing concretions of Moravian glei soils. *Sborn. Čsl. Akad. Zemd.* 11, 1936 (73-77). [C.e.]

**631.48 : 631.459**—Robinson, G. W. Normal erosion as a factor in profile development. *Nature* 137, 1936 (950).

**631.48 : 631.459**—Levenets, M. V. Influence of erosion on the processes of soil formation on the ancient and second terraces in the central Ural region. *Eroz. Pochv. Dokuchaev Inst.* 1937 (77-101). [R.]

**631.48 : 631.67**—Usov, N. I. The effect of artificial irrigation and natural humectation on the soil-forming processes of the Northern part of the Caspian Plain. *Uchen. Zap. Saratov. Gosud. Univ.* 12, 1934 (31-85). *Pedology* 1937 (305).

**631.483**—Pfeffer, P.; Hellmers, J. H. Weathering studies of basalt of Westerwalde. *Ztschr. Pflanz. Düng.* 36A, 1934 (296-320). [G.]

**631.483**—Harada, M. Weathering of igneous rocks. Weathering of basalt. *J. Agric. Chem. Soc. Japan* 11, 1935 (283-300, 456-472). C.A. 29 (6691).

## BIBLIOGRAPHY OF SOIL SCIENCE

**631.483 -Nikiforoff, C. C.** Weathering and soil-formation. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (324-326).

**631.483 -Polynov, B.** Types of weathering crusts. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (327-330).

**631.483 -Salminen, A.** On the weathering of rocks and the composition of clays. *Agrogeol. julk. Finland*, No. 40, 1935, pp. 149. (E.)

**631.483 -Freise, F. W.** The co-formation of kaolin and alumina from granite and gneiss. *Chem. Erde* 10, 1936 (311-342). (G.)

**631.483 Grosser, G.** "Northern weathering". *Bodenk. PflErnähr.* 1, 1936 (57-88). (G.)

**631.483 : 549 -Schwartz, R.** Artificial transformation of feldspar into kaolin. *Naturwissenschaften* 21, 1933 (252). Z.P.D. 38 (381).

**631.483 : 549 -Alexander, L. T. ; Byers, H. G.** The hydrolysis of calcium feldspar. *Amer. Soil Surv. Bull.* 17, 1936 (21-23).

**631.483 : 549 -Nagelschmidt, G.** On the lattice shrinkage and structure of montmorillonite. *Ztschr. Kristallog.* A, 93, 1936 (481-487). (E.)

**631.483 : 549 -Buehrer, T. F. ; Williams, J. A.** Hydrolysis of certain soil minerals. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (165-170).

**631.483 : 55 -Polynov, B. B.** The weathering cycle and the composition of continental deposits. *Doklady Inst. Studies Genesis Geography Soils*, 1935 (19-54). (G.)

### 631.5 CULTURAL OPERATIONS

**631.51 -Brétignière.** The importance of soil cultivation. *Trans. Int. Soc. Soil Sci. Comm. I. Versailles* 1934 (137-142). (F.)

**631.51 Opitz.** The importance of soil preparation for soil fertility. *Deut. Landw. Pr.* 61, 1934 (423-424). (C.A.29 (265)).

**631.51 Apsits, J.** Deep cultivation in the light of seven years of experimental research. *Ztschr. Pflanz. Düng.* 39, 1935 (326-349). (G.)

**631.51 Schmitz, F. D.** Present position and problems of soil mechanics. *Cong. Int. Genie Rural Pub. Agric. 2nd Cong. Madrid*, 1935. P.I.S. 12 (52).

**631.51 -Banks, A. B.** Cultivation and management of soils. *Newfoundland Agric. Sect. Bull.* 5, 1936, pp. 40.

**631.51 Kanivets, I. I. ; Gnatovskaja, A. I.** Degrees and forms of cultivation. *Shozn. Rab. VNIIS*, 1936 (162-175).

**631.51 Schmitz, F. D.** Soil tillage abroad. *Cong. Travail du Sol*, 1936. C.R. Pub. Salon de la Machine Agricole, Paris, 1936 (143-154). P.I.S. 12 (59).

**631.51 Bai, D. V.** Some methods of soil management. *Agric. Live-Stk India* 7, 1937 (1-10).

**631.51 Manninger, G. A.** On commercial soil cultivation. *Landwirtsch. Tagung, Bratislava*, 1937 (65-71). (G.)

**631.51 -Trullinger, R. W.** The fundamental approach to tillage and traction research problems. *Agric. Engng.* 18, 1937 (17-19).

**631.51 : 631.3 -Hopfen, H. J.** Recent investigations and experiments regarding soil cultivation. *Mo. Bull. Agric. Sci. Pract.* 28, 1937 (821-897).

## FERTILIZERS AND GENERAL AGRONOMY

- 631.51 : 631.557**—**Ostermayer, A.** Statistical studies of the relations between soil concentration and yield. *Arch. Pflanzenbau* 11, 1934 (161–172). [G.]
- 631.512**—**Iversen, K.** Experiments with different plough depths and subsoil loosening on loamy soils. *Tidsskr. Planavl* 40, 1935 (529–559). [Da.e.]
- 631.512**—**Kiel, W.** Stubble ploughing or immediate seed ploughing. *Mitt. Landw.* 50, 1935 (531, 552). Z.P.D. 43 (236).
- 631.512**—**Hopfen, H. J.** Influence of speed of ploughs on the quality of ploughing and on the construction of machines. *Int. Rev. Agric.* 27, 1936 (89T–91T).
- 631.512 : 631.416.2** **Görbing, J.** Influence of ploughing on the decomposition and effect of phosphoric acid. *Deut. Landw. Pr.* 62, 1935 (101). Z.P.D. 41 (383). [G.]
- 631.513**—**Piédaillu, A.** Utilisation of explosives in soil formation. *Trans. Int. Soc. Soil Sci. Comm. I, Versailles, 1934* (121–136). [F.]
- 631.517**—**Wade, C. P. G.** Mechanical cultivation in India. *Imp. Coun. Agric. Res. India Sci. Monog. No. 9, 1935*, pp. 124.
- 631.517**—**Kanivets, I. I.** Agro-evaluation of soil cultivation implements and plough land with mechanical cultivation for sugar beet. *Sborn. Rab. VNIIS, 1936* (442–514). [R.]
- 631.517**—**Novak, V.; Simek, J.** Results of field tests with the chief systems of mechanical cultivation of the soil. *Sborn. Čsl. Akad. Zemd.* 11, 1936 (383–392). [Cz.g.]
- 631.517 : 631.445.1.2** **Dalin, I.** Mechanization of breaking up and first cultivation of soils according to their technological types (in connection with the northward extension of agriculture). *Trans. Soviet Sect. Int. Soc. Soil Sci. Vol. 5, 1936* (263–265). [R.]
- 631.544.3**—**Bordas, J.** Soil heating. *Trans. Int. Soc. Soil Sci. Comm. I, Versailles, 1934* (271–295). [F.e.]
- 631.544.3** **Tomlinson, J. W.** Electric soil heating. *Bull. Hydro-Electric Power Comm. Ontario* 21, No. 10, 1934 (339–350). E.S.R. 72 (852).
- 631.544.3**—**Krueger, W. C.** Electric uses in the greenhouse. *Agric. Engng.* 16, 1935 (475–478).
- 631.544.3**—**Titus, O. W.** Promoting plant growth by electrically heated soil. *Canad. Hort.* 56, 1935 (51–52). *Ital. Agric.* 74 (59).
- 631.544.3** **Grainger, J.; Armstrong, T. F.** Some practices of electric heating of the soil and air. *Gard. Chron.* 99, 1936 (389, 407–408). *Hort. Abs.* 7 (107).
- 631.544.3** **Matcolm, D. H.** Electrically-heated seed beds. *Tasmanian J. Agric.* 7, 1936 (101–107).
- 631.544.3** **Quarrell, C. P.** Electrical heating of soil in frames. *J. Min. Agric.* 43, 1936 (446–452).
- 631.544.3**—**Stout, G. J.; Mack, W. B.; Nicholas, J. E., et al.** Experiments on electric, coal, gas, kerosene and manure-heated hotbeds. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (605–609).
- 631.544.3** **Stout, G. J.; Nicholas, J. E., et al.** Methods of heating hotbeds. *Pa. Agric. Expt. Sta. Bull.* 338, 1936, pp. 22.
- 631.544.3 : 631.841.5**—**Burk, E. F.** Synthetic manure-heated hotbeds. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (603–605).

# BIBLIOGRAPHY OF SOIL SCIENCE

**631.544.7**—Marion, A. W. Use of clover chaff as a mulch. *Proc. Ohio Veg. Grow. Assoc. 18th Ann. Meeting*, 1933. C.A. 28 (8911).

**631.544.7**—Servy, J. Culture under paper. *J. Agric. Prat.* 97, 1933 (400–401).

**631.544.7**—Musso, J. O. Mulching. *Bull. Appl. Bot. Lenin-grad* No. 13, Sec. A, 1934 (19–33). *Herb. Abs.* 6 (58).

**631.544.7**—Bansevich, N. N. Bitumen film as a soil mulching material. *Trud. Sekt. Fiz. Poche Fis.-Agron. Inst.* No. 1, 1935 (97–118). R.

**631.544.7**—Kan, L. I. Soil mulching. *Khim. Sotsial. Zemled.* Nos. 11–12, 1935 (161–166). [R.]

**631.544.7**—Kopetz, L. Soil mulching. Mulching with impregnated wood wool. *Landeskultur* 2, 1935 (100). Z.P.D. 41 (380). [G.]

**631.544.7**—Zhivan, V. P. The effect of mulching on plant growth. *Khim. Sotsial. Zemled.* No. 5, 1935 (69–77). [R.]

**631.544.7**—Maher, C. Mulches. *E. Afric. Agric. J.* 1936 (415–420).

**631.544.7**—Podshivalov, S. Y. Mulching soil under pasture grasses grown for seed. *Khim. Sotsial. Zemled.* No. 4, 1936 (67–76). R.

**631.544.7**: **631.434** Westover, K. C.; McCubbin, E. N. The influence of soil type on results from paper-mulch trials with the pepper and egg plant. *Proc. Amer. Soc. Hort. Sci.* 30, 1933 (465). E.S.R. 72 (183).

**631.544.7**: **631.459**—Martin, W. S. Mulching with grass and plantain trash and its effect on crop and soil conditions. *E. Afric. Agric. J.* 1, 1935 (140–144).

**631.544.7**: **631.46**—Ferretti, C. Soil covering and bacterial activity. *Mem. Lab. Pat. Batt. Ist. Agrar. Pisa* 3, No. 51, 1931, pp. 26.

**631.544.7**: **631.46**—Yakovleva, V. Biochemical soil processes in relation to mulching. *Khim. Sotsial. Zemled.* 6, 1933 (24–30). *Zbl. Bakt.* 94 (283). R.

**631.544.7**: **631.46**—Shilova, E. I. Mulching in relation to biochemical processes in the soil. *Leningr. Univ. Uchen. Zap.* 1, 1935 (133–168). [R.]

**631.544.7**: **631.46**—Yatsiuk, P. A. The dynamics of soil processes under mulches in the extreme North. *Leningr. Univ. Uchen. Zap.* 1, 1935 (169–190). R.

**631.544.7**: **631.81**—Balashov, A. N. Mulching and fertilizers. *Khim. Sotsial. Zemled.* Nos. 11–12, 1935 (167–175). [R.]

**631.547.1**—Dunlap, A. A. Sand culture of seedlings as compared with soil culture. *Abstr. Papers Physiol. Sect. Bot. Soc. Amer.* 1934. *Amer. J. Bot.* 21, 1934 (704).

**631.547.1**: **539.16**—Havas, L. Some effect of radioactive mud upon germination of seeds and growth of seedlings. *J. Agric. Sci.* 25, 1935 (198–216).

**631.547.1**: **539.16**—Kosmath, W.; Hartmair, V. Does the average radon content of the soil air affect seed germination in the soil? *Protoplasma* 24, 1935 (7–13). *Bull. Inst. Past.* 35 (457).

**631.547.1**: **541.132**—Schmitz, E. Influence of chlorate, iodate, perchlorate and periodate on germination and early development

## FERTILIZERS AND GENERAL AGRONOMY

of cultivated plants. *Diss. Bonn* 1929, *Bied. Zbl.* 3A, 1932 (54-55). B.C.A. 52 (518).

**631.547.1 : 631.436**—Aamodt, O. S. Germination of Russian pigweed seeds in ice and on frozen soil. *Sci. Agric.* 15, 1935 (507-508).

**631.547.1 : 631.436**—Martin, J. H.; Taylor, J. W.; Leukel, R. W. Effect of soil temperature and depth of planting on the emergence and development of sorghum seedlings in the greenhouse. *J. Amer. Soc. Agron.* 27, 1935 (660-665).

**631.547.1 : 631.44**—Kasasky, C. The stimulative effect of the soil on seed germination. *Ztschr. Landw. VersSta. Bulgarien* 14, 1933 (5-29). *Bied. Zbl.* 65 (197).

**631.547.1 : 631.81**—Grimaldi, A. Effects of localized chemical fertilization upon the germination capacity of seeds. *Ann. Tec. Agrar. Roma* 9, 1936 (64-72, 79-98). *Herb. Abs.* 7 (74).

**631.547.2 : 523.32**—Jaeger, H.; Popp, M. Has the moon an influence on plant growth? I, II. *Ztschr. Pflanz. Düng.* 41, 1936 (336-357). [G.]

**631.547.2 : 523.32**—Opitz, K. The influence of the moon on plant growth. *Ztschr. Pflanz. Düng.* 41, 1936 (357-359). [G.]

**631.547.2 : 523.32**—Popp, M. Has the moon an influence on plant growth? *Bodenk. Pflernähr.* 3, 1937 (133-138). [G.]

**631.547.2 : 539.16**—Wohlbold, H. The influence of radium on vegetation. *Deut. Landw. Pr.* 63, 1936 (615-616). C.A. 31 (1934). [G.]

**631.547.2 : 546.683**—Horn, E. E.; Ward, J. C., et al. Effect of thallium on plant growth. *Science* 80, 1934 (167-168). B.C.A. 53 (977).

**631.547.2 : 546.683**—Horn, E. E.; Ward, J. C.; Munch, J. C., et al. The effect of thallium on plant growth. *U.S.D.A. Circ.* 409, 1936, pp. 8.

**631.547.2 : 550.35**—Müller, K. M. First impressions regarding the occurrence and mode of action of a new form of natural earth radiation stimulating the growth of plants—a preliminary communication. *Silva* 24, No. 23, 1936 (185-190). C.M.R. 1935 (No. 470). [G.]

**631.547.2 : 550.35**—Kennel. Must one believe in the effect of "earth rays" on plant growth? *Allg. Forst- u. Jagd-Ztg.* 113, 1937 (26-28). C.M.R. 12, 1937 (3). [G.]

**631.548**—Farmer's Weekly, South Africa. Raising crops without soil. *Farm. Week. S. Africa* 53, 1937 (1149).

**631.557 : 551.577**—Daniel, H. A. A study of certain climatic factors that may affect crop yields in the high plains of Oklahoma. *Panhandle Agric. Expt. Sta. Bull.* 57, 1935 (3-10). E.S.R. 73 (746).

**631.557 : 551.577**—Metzger, W. H. The relation of varying rainfall to soil heterogeneity as measured by crop production. *J. Amer. Soc. Agron.* 27, 1935 (274-278).

**631.557 : 551.577**—Barnard, M. M. An examination of the sampling observations on wheat of the crop-weather scheme. *J. Agric. Sci.* 26, 1936 (456-487).

**631.58 : 551.58**—Albright, W. D. Crop growth in high latitudes. *Geog. Rev.* 23, 1933 (608-620). *Biol. Abs.* 11 (569).

**631.58 : 551.58**—Russell, E. J. Principles and methods of soil utilization with illustrations from the British Empire. *Proc. 2nd Int. Cong. Soil Sci.* 7, 1933 (63-66).

# BIBLIOGRAPHY OF SOIL SCIENCE

**631.581—Aslander, A.** Summer fallow: its meaning and management. *Medd. Kgl. Landbr.Akad. Landbr.Avd.* 9, 1934, pp. 47. [Sw.e.]

**631.581:631.432.2—Grandfield, C. O.; Metzger, W. H.** Relation of fallow to restoration of subsoil moisture in an old alfalfa field and subsequent depletion after reseeding. *J. Amer. Soc. Agron.* 28, 1936 (115-123).

**631.581:631.461.3—Znamensky, V. D.; Arkharov, M. G.** Nitrication under the conditions of southern chernozem in the former North Caucasian Region. *Sborn. Rab. Azovo-Chernomorskogo S. Kh. Inst.* 3, 1934 (98-106). *Pedology* 1936 (919). [R.]

**631.581:631.51—Korneeva, N. P.; Kukharensky, N. I.** Dynamics of physico-biological processes in relation to peculiarities of plough land and cultivation characteristics. *Sborn. Rab. VNTS.* 1936 (531-537). [R.]

**631.582—Forsberg, L.** Effects of the previous crop. *Landtmannen* 15, 1934 (445-446). *B.C.A.* 54 (72).

**631.582—Meijers, P. G.** Rotations. *Rijkslandb.Proefsta. Akker-Weidebouw Groningen*, 1936, pp. 72. [Du.]

**631.582—Schafer, E. G.; Wheating, L. C.; Vandecaveye, S. C.** Crop rotations. Part I. Effect of crop rotations on succeeding crops. Part II. Effect of crop rotations on productivity of the soil. *Wash. Agric. Expt. Sta. Bull.* 344, 1937, pp. 74.

**631.582:631.67 Powers, W. L.** Soil fertility in relation to productive land value. *Oreg. Agric. Expt. Sta. Circ.* 113, 1935, pp. 9.

**631.582:631.67 Hastings, S. H.; Hansen, D.** Irrigated crop rotations at the Huntley (Mont.) field station, 1912-35. *U.S.D.A. Tech. Bull.* 571, 1937, pp. 37.

**631.582:631.81 Pittman, D. W.** Fertility maintenance by rotation and manure. *Utah Agric. Expt. Sta. Bull.* 271, 1936, pp. 12. *E.S.R.* 75 (310).

**631.582:631.81 Vytchikov, A. I.** The study of fertilizer systems in forage crop rotation. *Khim. Sotsial. Zemled.* No. 5, 1937 (34-44). [R.]

**631.584—Kell, W. V.; McKee, R.** Cover crops for soil conservation. *U.S.D.A. Farm. Bull.* 1758, 1936, pp. 14. *Hort. Abs.* 7 (45).

**631.584—Pohlman, G. G.; Henderson, H. O.** Thirteen years' results with cover crops. *W. Va. Agric. Expt. Sta. Bull.* 275, 1936, pp. 12.

**631.584—Stokes, W. E.** Effects of summer cover crops on crop yields and on the soil. I. Yields of corn and sweet potatoes following cover. *Fla. Agric. Expt. Sta. Bull.* 301, 1936 (3-13). *E.S.R.* 76 (323).

**631.584—United States Department of Agriculture.** Effects of summer soil-conserving crops on yields of other crops. A summary of experimental work done in the Southern Region and nearby States. *U.S.D.A. Adjust. Admin. S. Region Agric. Conserv.* No. 1, 1936, pp. 64. *E.S.R.* 76 (323).

**631.584—United States Department of Agriculture.** Effects of winter soil-conserving crops: A compilation of experimental work on winter soil-conserving crops in the Southern Region and near-by States. *U.S.D.A. Adjust. Admin. S. Region Agric. Conserv.* No. 2, 1936, pp. 54. *E.S.R.* 76 (323).

## FERTILIZERS AND GENERAL AGRONOMY

- 631.584: 631.416.13**—Stokes, W. E.; Barnette, R. M.; Hester, J. B. Effects of summer cover crops on crop yields and on the soil. *Fla. Agric. Expt. Sta. Bull.* 301, 1936, pp. 22.
- 631.584: 631.461.5**—Thornton, H. G.; Nicol, H. Nitrogen uptake of grass grown with lucerne. *J. Agric. Sci.* 24, 1934 (540–543). B.C.A. 54 (38).
- 631.584: 631.461.5**—Nicol, H. The utilisation of atmospheric nitrogen by mixed crops. *Mo. Bull. Agric. Sci. Pract.* 27, 1936 (2011–2151).
- 631.584: 631.461.5**—Demidenko, T. T.; Timofeeva, E. F. The influence of nodule bacteria and azotobacter on the yield of legumes and cereals sown together. *C.R. Acad. Sci. (U.S.S.R.)* 14, 1937 (231–233). T.E.
- 631.584: 631.461.5**—Nowotná, A. An investigation of nitrogen uptake in mixed crops not receiving nitrogenous manure. *J. Agric. Sci.* 27, 1937 (503–510).
- 631.584: 631.461.5**—Trumble, H. C.; Strong, T. H. On the nitrogen accretion of pasture grasses when grown in association with legumes. *Aust. Comm. Sci. Indust. Res. Bull.* 105, 1937 (11–24).
- 631.586** Borzdyko, P.; Simonov, N. Fundamental questions of dry farming in Central Asia. *Sel'khozgiz*, 1935, pp. 179. *Herb. Abs.* 6 (48).
- 631.586** Barnes, S. The efficient use of soil moisture as a factor in the control of drought. *Sci. Agric.* 16, 1936 (275–280).
- 631.586**—Burnham, D. R.; Cole, J. S. Dry-land crops at the Tucuman field station. *N. Mex. Agric. Expt. Sta. Bull.* 244, 1936, pp. 48.
- 631.586: 631.582**—Hopkins, E. S. Cultural and rotational practices for dry land agriculture. *Sci. Agric.* 16, 1935 (121–126).
- 631.588.1**—Ukradyga, F. E.; Zanevich, V. The effect of electrifying the soil on the yield of oats under conditions of vegetative experiments. *Nauch. Zap.* 11, 1934 (72–74). R.e.]
- 631.588.2**—Nehru, S. S. Radiation and plant growth. A study of new methods in agriculture. *Atti 1<sup>a</sup> Cong. Int. Elettro-Radio-Biologia* 1, 1934 (121–132). I.e.]
- 631.589**—Perry, G. S. Some chemical and physical effects of forest fires on soil. *Proc. Pa. Acad. Sci.* 5, 1931 (123–127). E.S.R. 73 (53).
- 631.589**—Haddon, H. J.; White, J. T. Burnt soil. *Korte Meded. Alg. Proefsta. Landb.* No. 14, 1934, pp. 27. [Du.e.]
- 631.589**—Thompson, W. R. Veld burning: its history and importance in South Africa. *Univ. Pretoria Ser.* 1, 31, 1936, pp. 19.
- 631.589**—Whittlesey, D. Shifting cultivation. *Econ. Geog.* 13, 1937 (35–52).
- 631.589**—Whittlesey, D. Fixation of shifting cultivation. *Econ. Geog.* 13, 1937 (137–154).
- 631.589: 631.417**—Greene, S. W. Effect of annual grass fires on organic matter and other constituents of virgin longleaf pine soils. *J. Agric. Res.* 50, 1935 (809–822).
- 631.589: 631.459**—Liebenberg, L. C. C. Veld burning. How it affects the farmer as well as the country. *Farm. S. Africa* June & July, 1934, pp. 5.



# BIBLIOGRAPHY OF SOIL SCIENCE

## 631.61 LAND RECLAMATION

- 631.61—Scott, J. D. Some problems in the restoration of veld. *Farm. S. Africa* 10, 1935 (103-105).
- 631.61—Lane, E. W. The behaviour of soil materials in water-retaining structures. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (367-375).
- 631.61 : 561.311.31—Kroodasma, R. F. The permanent fixation of sand dunes in Michigan. *J. Forestry* 35, 1937 (365-371).
- 631.61 : 631.81—Tommasi, G., et al. The fertilizing of reclaimed soils. *Ztschr. Pflanz. Düng.* 39, 1935 (80-155). [G.]
- 631.61 : 633.287—Smit, N. L. Rhodes grass for the reclamation of old lands. *Farm. S. Africa* 11, 1936 (319-320, 348).
- 631.611—Vesikivi, A. An improvement and manurial trial on natural meadow on ten soils. *Finska MosskFören. Årb.* 37, 1934 (111-120). *Herb. Abs.* 5 (196).
- 631.611—Elenevsky, R. A. Flood plains, their study and reclamation. *Inst. Bolot. Khoz. Minsk* 1936, pp. 99. [R.e.]
- 631.611—Stapledon, R. G. The case for land improvement and reclamation. *J. Roy. Soc. Arts* 74, 1936 (972-985).
- 631.611—Griffith, M. The Cahn Hill improvement scheme. *Welsh J. Agric.* 13, 1937 (211-228).
- 631.611—Scottish Journal of Agriculture. The improvement of grazing lands. *Scot. J. Agric.* 20, 1937 (173-178). *Herb. Abs.* 7 (198).
- 631.613—Johnson, G. I.; Danner, W. N.; Peikert, F. W. Terracing farm land in Georgia. *Gea. Agric. Expt. Sta. Bull.* 394, 1935, pp. 242. *E.S.R.* 74 (112).
- 631.613—Agricultural Engineering. Terracing machinery and terrace construction practices. *Agric. Engng.* 17, 1936 (47-54).
- 631.613—Kirtbala, Yu. K. Mechanization of constructing terraces on slopes. *Soviet. Subtrop.* No. 2, 1936 (34-39). [R.]
- 631.613—Maher, C. An inexpensive wooden drag for use in the construction of Mangum base terraces. *E. Afric. Agric. J.* 1, 1936 (311-313).
- 631.615—Frost, R. S. The reclamation of the Pontine Marshes. *Geog. Rev.*, Oct. 1934 (584-595).
- 631.615—Patterson, T. H. Farm drainage and swamp reclamation. *Agric. Gaz. N.S.W.* 45, 1934 (613-619).
- 631.615—Tommasi, G. Improvement of the Agro Pontino. I. Types of soil and their possibilities. *Ann. Sta. Chim.-Agrar. Roma* 14, 1934, pp. 28. *B.C.A.* 54 (71).
- 631.615—Tommasi, G. Improvement of the Agro Pontino. II. Agrarian tests for the evaluation of reclaimed soil. *Ann. Sta. Chim.-Agrar. Roma* 14, 1934, pp. 39. *B.C.A.* 54 (1060).
- 631.615—Kelly, J. Land reclamation in the congested districts. *J. Dept. Agric. I.F.S.* 33, 1935 (183-188). *Herb. Abs.* 6 (50).
- 631.615—Ogg, W. G.; McLeod, A. Reclamation and cultivation of peat land in Lewis. *Scot. J. Agric.* 18, 1935 (153-159).
- 631.615—Patterson, T. H. Farm drainage and swamp reclamation. *Agric. Gaz. N.S.W.* 46, 1935 (121-126).
- 631.615—Remy, T. The Rengen estate as an example of land reclamation. *Erndhr. Pflanze* 31, 1935 (161-172).

## FERTILIZERS AND GENERAL AGRONOMY

- 631.615** Veltman. The Uchte moorland. Development and possibilities of utilizing a recent north-west German high-moor. *J. Landw.* 83, 1935 (175-202). B.C.A. 54 (1107). [G.]
- 631.615** -Davidson, D.; Withers, E. Reclamation of upland peat in Glamorgan. *Welsh J. Agric.* 13, 1937 (256-259). [G.]
- 631.615** -Geltman, B. G. Results of experiments with the drainage of marshes for agricultural utilization in the north and north-west regions of the European part of the U.S.S.R. *Pedology* No. 5, 1937 (647-654). [R.G.]
- 631.615** -Weir, W. W. Subsidence of peat land in the Sacramento-San-Joaquin Delta of California. *Proc. Int. Soc. Soil Sci.* 12, 1937 (31). [E.]
- 631.615** -Zhmako, N. M.; Ioseleva, M. A. The transformation of organic matter of moor soils under the influence of drainage and cultivation. *Pedology* No. 5, 1937 (729-738). [R.G.]
- 631.615** -Hagerup, H. Controlled grazing for the different methods of cultivation employed in the conversion of grass bog into pasture. *Medd. Norske Myrselsk.* 32, 1934 (150-174). *Hort. Abs.* 5 (35). [N.]
- 631.615** -Tind-Christensen, C. J. Experiments with fertilizers, lime, and marl on marsh soils. *Tidsskr. Planavl.* 41, 1936 (1-64). [Dae.]
- 631.615** -Emmert. Can marsh flats be ameliorated by marling? *Deut. Landeskztg.* 4, 1935 (17). *Z.P.D.* 43 (229). [G.]
- 631.615** -Ruthjens, H. H. Three-year experiments on the mixing of blue sand in the North Sea marshes. *Kuhn-Arch.* 42, 1937 (59-109). [G.]
- 631.616** -Hissink, D. J. The enclosure and drainage of a part of the Zuider Zee from the soil science standpoint. *Proc. 2nd Int. Cong. Soil Sci.* 7, 1933 (57-62). [G.]
- 631.616** -Hissink, D. J. Report on the effect of drainage operations in the young Zuider Zee soils and the polder soils of the Dollart region. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (394-397). [G.]
- 631.616** -Zuur, A. J. The desalinization of saline soils in the humid Dutch climate. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (409-412). [G.]
- 631.616** -Batten, H. M. A Dutch method of sand dune reclamation. *J. Min. Agric.* 44, 1937 (518). [G.]
- 631.617** -Baranov, P.; Raikova, I. Reclamation of the Pamir and other highlands of Central Asia. *Reclam. Deserts Cent. Asia* 1934 (237-247). *Herb. Abs.* 6 (50). [R.]
- 631.617** -Korovin, E. P. Ecological study of desert types of Central Asia and Kazakhstan with reference to their reclamation. *Reclam. Deserts Cent. Asia* 1934 (5-19). *Herb. Abs.* 6 (52). [R.]

## 631.62 DRAINAGE

- 631.62** -Fauser, O. Report from the drainage research fields. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (388-391). [G.]
- 631.62** -Roe, H. B.; Neal, J. H. Farm drainage practice. *Minn. Agric. Expt. Sta. Div. Agric. Engng. Spec. Bull.* 149, 1935, pp. 24.

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.62—Setinski, V.** My drainage principles and the law of Darcy. *Soil Res.* 4, 1935 (269-315). [G.]
- 631.62—Graf, D. W.** Bibliography on land drainage. *U.S.D.A. Bur. Agric. Engng.* 1936, pp. 245. E.S.R. 77 (404).
- 631.62—Koehe, W.** Review of ground water science. *Kulturtech.* 39, 1936 (1-40). [G.]
- 631.62—Astapov, S. V.; Vekslev, Yu. F.** The effect of different drainage systems on mineral soils with excess moisture. *Pedology* No. 5, 1937 (669-681). [R.g.]
- 631.62—Fedorov, P.** The results of drainage experiments in Fergana. *Pedology* No. 5, 1937 (743-760). [R.e.]
- 631.62—Nicholson, H. H.** The present condition of drainage as a limiting factor in productivity. *Agric. Prog.* 14, 1937 (234-240).
- 631.62: 541.134.5—Smolik, L.** Drainage research. Reduction potentials in drained and undrained soils. *Proc. Int. Soc. Soil Sci.* 12, 1937 (18-19). [E.]
- 631.62: 553.97—Sohns.** The application of fibrous peat in drainage on peat and mineral soils. *Ztschr. Verb. Deut. Kulturtech.* 25, 1932 (8-9). *Bied. Zbl.* 64 (110). [G.]
- 631.62: 616.936—Williamson, K. B.** The control of rural malaria. Part. IV. Methods based upon processes of natural control. *Trop. Agrist.* 84, 1935 (78-87).
- 631.62: 626.862.6—Oehler, P.** Experiences with mole drainage at Hochburg. *Kulturtech.* 36, 1933 (9-14). *Bied. Zbl.* 64 (111). [G.]
- 631.62: 626.862.6—Blackaby, J. H.** Mole drainage. *Impl. Mach. Rev.* 82, 1937 (847).
- 631.62: 626.862.6—Nicholson, H. H.** Points on mole draining. *Husbandry* 7, 1937 (123-126).
- 631.62: 626.862.6—Ridiger, V. R.** Mole drainage in U.S.S.R. *Pedology* No. 5, 1937 (655-668). [R.e.]
- 631.62: 631.411.3—Rozov, L. P.** Data for the study of the draining of heavy podzolic soils. *Trudy Inst. Hydrotekh.* 11, 1935 (5-94). *Pedology* 1936 (949). [R.]
- 631.62: 631.416—Holmes, R. S.** Influence of drainage upon coastal-plain soils. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (161-163).
- 631.62: 631.432.3—Kozeny, J.** Water accumulation at drain-pipe joints. *Wasserbau u. Wasserwirtschaft* 28, 1933 (13-17). [G.]
- 631.62: 631.432.3—Erkin, G. D.** A new method for determining the distance between drains in draining peat soils. *Inst. Bolot. Khaz. Minsk* 1934, pp. 67. *Pedology* 1935 (928). [R.e.]
- 631.62: 631.432.3—Erkin, G. D.** The specific efficiency of water and its study in soil drainage. *Trans. Int. Soc. Soil Sci. Soviet Sect. 1st Comm.* A2, 1934 (112-119). [F.]
- 631.62: 631.432.3—Neal, J. H.** Proper spacing and depth of tile drains determined by the physical properties of the soil. *Minn. Agric. Expt. Sta. Tech. Bull.* 101, 1934, pp. 62.
- 631.62: 631.432.3—Hooghoudt, S. B.** The relationships between water discharge, ground water level, drain spacing and permeability to water. Control tests on sandy soils. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (397-401). [G.]
- 631.62: 631.432.3—Kostiakov, A. N.** On the determination of distance between drains. *Trans. Int. Soc. Soil Sci. Soviet Sect.* 1935 (190-197).

# FERTILIZERS AND GENERAL AGRONOMY

- 631.62 : 631.432.3—Diserens, E.** The means of determining the functioning of sanitation, canals and drainage. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (45-69). [F.]
- 631.62 : 631.432.3—Flodkvist, H.** Agronomic-hydrotechnical results of drainage experiments on clay soils. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (164-168). [G.]
- 631.62 : 631.432.3—Setinski, V.** The determination of drain spacings. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (163-164). [G.]
- 631.62 : 631.432.3—Setinski, V.** The law of Darcy and the determination of drain spacing. *Soil Res.* 5, 1937 (193-199). [G.]
- 631.62 : 631.434—Fauser, O.** The effect of drainage on soil structure. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (391-394). [G.]
- 631.62 : 631.434—Fauser, O.** Investigation on the effect of drainage on loess soils. *Kulturtech.* 38, 1935 (27-38). [G.]
- 631.62 : 631.445.2—Rozov, L. P.** Dynamic soil process following the drainage of podzol soils. *Pedology* No. 5, 1937 (682-692). [R.g.]
- 631.621—Cheshunt Experimental Research Station.** Chemical investigations. *Cheshunt Rept.* 1932 (58). C.A. 27 (5860).
- 631.621—Braadlie, O.** Drainage water from cultivated clay soil. *Tidsskr. Norske Landbr.* 41, 1934 (94-109). C.A. 30 (3564).
- 631.621—Roszhdestvensky, E. D.** Chemical analyses of drainage waters and their evaluation for different purposes. *Trudy Sredne-Aziatskogo Inst. Irrig.* 20, 1934 (1-19). *Pedology* 1936 (911). [R.]
- 631.621—Hendrick, J.; Welst, H. D.** A note on the nature of suspended matter in the drainage waters from the Craibstone lysimeters, Aberdeen. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (293-295).
- 631.621—Osugi, S.** Lysimeter experiments with barley, tea and rice. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (205-207).
- 631.621—Boeuf, F.; Novikoff, V.** Vegetative and lysimeter experiments of the botanical and agronomical service of Tunis. *C. R. Acad. Agric.* 22, 1936 463-473. [F.]
- 631.621 : 553.97—Neller, J. R.** Effect of rainfall and of substrata upon composition and reaction of soil waters of Everglades peat land. *Trans. 6th Comm. Int. Soc. Soil Sci. Zurich* (31-32) [F.]
- 631.621 : 631.81—Ikeda, M.** On the influence of manure upon the nature of drainage water and a soil-lysimeter experiment. *J. Sci. Soil Japan* 11, 1937 (247-259). [J.e.]
- 631.622—Beaumont, A. B.** An inexpensive type of construction for concrete tanks for soil investigations. *J. Amer. Soc. Agron.* 27, 1935 (497-498).
- 631.622—Collison, R. C.** Lysimeter investigations. IV. Water movement, soil temperatures, and root activity under apple trees. *N.Y. Agric. Expt. Sta. Tech. Bull.* 237, 1935, pp. 31.
- 631.622—Musgrave, G. W.** A device for measuring precipitation waters lost from the soil as surface run-off, percolation, evaporation, and transpiration. *Soil Sci.* 40, 1935 (391-396).
- 631.622—Winnik, M.** Ten years of lysimeter studies on some soils of Palestine. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (212-214).
- 631.622—Lyon, T. L.; Bizzell, J. A.** Lysimeter experiments. IV. Records for tanks 17 to 20 during the years 1922 to 1933, and for tanks 13 to 16 during the years 1913 to 1928. *Cornell Agric. Expt. Sta. Mem.* 194, 1936, pp. 59.

## BIBLIOGRAPHY OF SOIL SCIENCE

### 631.67 IRRIGATION

- 631.67: Brown, C. A.** Field engineering problems of the newer methods of irrigation. *Proc. Hawaii Sug. Tech. Assoc.* 13, 1934 (83-88). F.A.S. 29, 1934 (450).
- 631.67—Arndt, F. R.** Irrigation and drainage. *J. Dept. Agric. S. Aust.* 39, 1935 (58-69).
- 631.67 Current Science.** Irrigation research in the Bombay Presidency. *Curr. Sci.* 3, 1935 (438-439).
- 631.67—Hewson, R.** Some factors affecting the Gezira irrigation scheme. *Emp. Cott. Grow. Rev.* 12, 1934 (25-31).
- 631.67—Madras Agricultural Journal.** The irrigation problem. *Madras Agric. J.* 23, 1935 (51-55).
- 631.67—Lyon, A. V.** Maintaining the productivity of irrigated lands. *J. Aust. Inst. Agric. Sci.* 3, 1937 (79-83).
- 631.67—Warren, W. D. M.** The irrigation of dry hill soil areas. *Indian Forester* 63, 1937 (222-227).
- 631.67: 553.983—Zakharov, N. G.** The use of bitumen emulsion in irrigation. *Khim. Sotsial. Zoolod.* No. 10, 1938 (91-93). [R.]
- 631.67: 581.116 Coetzee, P. J. S.** Practical application of transpiration data to irrigation problems. *Farm. S. Africa* 12, 1937 (73-74).
- 631.67: 581.144.2—Kruzhilin, A. S.** The effect of irrigation on the development of the root system of sunflowers, sugar beet and soya. *Sotsial. Zern. Khoz.* No. 5, 1935 (29-40). [R.e.]
- 631.67: 631.416—Sushko, S. Y.** Behaviour of salts in soil and in subsoil water in relation to irrigation. *Trudy Gidroz. Inst. Udob. Leningr. Lab.* No. 20, 1933 3 67. B.C.A. 54 (72).
- 631.67: 631.416 Buntiakov, S. I.** The effect of flooding spring wheat on the salt regime of soils. *Sotsial. Zern. Khoz.* No. 4, 1935 (68-76). R.
- 631.67: 631.416 Chevallier, G.** Comparison between surface and subterranean irrigation in Southern Algeria. *C.R. Acad. Agric.* 21, 1935 (682-686). F.
- 631.67: 631.416—Rozov, L. P.** Preliminary scheme of a reclamation nomenclature of the soils of irrigation zones. *Pedology* No. 3, 1935 (322-328). R.e.
- 631.67: 631.416.13—Boisshot, P.; Drouineau, G.** Influence of irrigation on the nitrate content of southern soils. *C.R. Acad. Agric.* 22, 1936 (1090-1093). F.
- 631.67: 631.43—Fausser, O.** Comparative investigations on the irrigation requirement of the soil. *Proc. Int. Soc. Soil Sci.* 12, 1937 (23-25). G.
- 631.67: 631.432—Vaidhianathan, V. I.; Luthra, H. R.; Bose, N. K.** A hydrodynamical investigation of the sub-soil flow from canal beds by means of models. *Proc. Indian Acad. Sci.* 1, 1934 (325-331).
- 631.67: 631.432.2—Edlefsen, N. E.** Effect of soil moisture characteristics on irrigation requirements. *Agric. Engng.* 18, 1937 (247-250).
- 631.67: 631.432.2—Penman, F.; Skene, J. K. M.; Walters, D. V.** Irrigation of sultanias in the Swan Hill district. *J. Dept. Agric. Victoria* 35, 1937 (348-364).

## FERTILIZERS AND GENERAL AGRONOMY

- 631.67 : 631.432.2** - Shaw, H. R. ; Swezey, J. A. Scientific irrigation management. *Hawaii. Plant. Rec.* 41, 1937 (199-279).
- 631.67 : 631.432.2** - Tisdall, A. L. Moisture content fluctuations on irrigated soils in South Australia. \* *J. Aust. Inst. Agric. Sci.* 3, 1937 (162-166).
- 631.67 : 631.434** - Bystrov, S. V. ; Beliakova, L. P. Ground subsidence in irrigated areas. *Pedology* No. 3, 1935 (329-338). [R.e.]
- 631.67 : 631.434** - Ustinovich, A. Some experimental data on the compacting of subsoil under irrigation in the Golodnaia steppe. *Bull. Sredneaz. Nauch. Inst. Khlopkov.* 2, 1935 (111-115). [R.e.]
- 631.67 : 631.434** - Means, T. H. The effect of irrigation upon soil texture. *Science* 84, 1936 (39-40).
- 631.67 : 631.436.6** - Prostavkov, P. E. ; Shcherba, A. G. The problem of winter irrigation. *Pedology* No. 1, 1936 (132-139). [R.e.]
- 631.67 : 631.44** - Harper, W. G. The relation of soil characteristics as expressed by certain soil types, to choice of land for irrigation farming. *Amer. Soil Surv. Bull.* 17, 1936 (74-76).
- 631.67 : 631.458** - Lewis, A. H. ; Neave, O. Removal of plant nutrients by irrigation from soils in the Canary Isles. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (407-409).
- 631.67 : 631.581** - Greene, H. ; Snow, O. W. The effect of irrigation and dry fallow on a heavy, base saturated soil. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (21-24).
- 631.67 : 631.586** - Brown, K. H. Irrigation in a dry-farming region. *Geog. Rev.* Oct. 1934 (596-604).
- 631.67 : 631.62** - Viswanath, B. The drainage aspect of irrigation. *Madras Agric. J.* 23, 1935 (60-64).
- 631.67 : 631.81** - Sinlagin, I. I. The effectiveness of fertilizers in the regions of industrial crops. *Agric. Sci. Kazakhstan* 1-2, 1935 (67-76). [R.e.]
- 631.67 : 631.81** - Singleton, H. P. ; Wheeting, L. C. The effects of fertilizers on the productivity of Sagemoor fine sandy loam under irrigation. *Wash. Agric. Expt. Sta. Bull.* 346, 1937, pp. 26.
- 631.67 : 631.811.91** - Schulek, B. How often and how much water should be applied in irrigation? Study of the amount of irrigation water and times of irrigation. *Mezőg. Kutat.* 10, 1937 (7-22). [H.g.]
- 631.67 : 631.86** - Hastings, S. H. Effect of alfalfa and farm manure on yields of irrigated crops in the Great Plains. *U.S.D.A. Tech. Bull.* 483, 1935, pp. 40.
- 631.67 : 631.879.2** - Weber, E. Z. Sewage disposal by subsoil irrigation. *Gesundh. Tech. Stadehyg.* 25, 1933 (145). *U.S. Pub. Health Engng. Abs.* 15S, 48 (Aug. 3, 1935). *C.A.* 30 (1478). [G.]
- 631.671** - Lazarev, K. Changes in salt content of irrigation water as it passes through the irrigation system. *Hydrochem. Materialien (U.S.S.R.)* 5, 1930 (58-82). *B.C.A.* 54 (243).
- 631.671** - Fleming, W. M. A measuring device for irrigation experiments. *Sci. Agric.* 16, 1936 (619-620). *Hort. Abs.* 6 (166).
- 631.671** - Palmer, A. E. Use of irrigation water on farm crops. *Canada Dept. Agric. Pub.* 509 (*Farm. Bull.* 10, *Rev. Bull.* 125) 1936, pp. 51.

## BIBLIOGRAPHY OF SOIL SCIENCE

**631.671—Vishins'ky, O. M. ; Yunik, S. M.** The utilization of canal effluent in irrigated fields. *Trudi Inst. Agrogrunt. Khim.* 1, 1936 (153-183). [U.r.g.]

**631.671—Amin, I. S.** Importance of chemical analysis of well waters for irrigation of crops in agriculture. *Poona Agric. Coll. Mag.* 28, 1937 (89-97).

**631.671 : 546.27—Derby, R. L.** Methods of testing and significance of boron in water. *J. Amer. Water Works Assoc.* 28, 1936 (1449-1455). B.C.A. 56 (1936).

**631.671 : 553.72—Eaton, F. M.** Salinity of irrigation water and injury to crop plants. *Calif. Citrog.* 20, 1935 (302, 322, 324, 326, 334, 362-365). C.A. 30 (213).

**631.671 : 553.72—Werber, A.** Is irrigation with saline water possible? *Hadar* 9, 1936 (201-203).

**631.671 : 620.19—Waynick, D. D.** The effect of soluble fertilizers on cement pipe. *Calif. Citrog.* 20, 1935 (390-391).

**631.671 : 631.415.1—Madar, K. V.** Influence of sodium-containing irrigating water on soil properties. *Cong. Int. Tech. Chim. Indust. Agric. Proc. 5th Cong. Holland* 1, 1937 (249-253). B.C.A. 56 (954).

**631.671 : 631.816.3—Skriabin, F. A.** The application of fertilizers with the irrigation water. *Bull. Sots.NIKol.* 1, 1936 (12-15). [R.e.]

**631.671 : 631.816.3—Borden, R. J. ; Berg, K. H.** Variation in the nitrogen content of irrigation water carrying dissolved nitrogen fertilizer. *Hawaii. Plant. Rec.* 41, 1937 (91-97).

### 631.81 FERTILIZERS AND MANURES

**631.81—Tommasi, G.** Improvement of soils by chemical manuring. *Ann. Sta. Chim.-Agrar. Roma* 14, 1934, No. 306, pp. 30. B.C.A. 54 (324). [I.]

**631.81—Vries, O. de.** The reciprocal relationships between different aspects of fertilizer research as a polydimensional problem. *Ernähr. Pflanze* 30, 1934 (373-381). C.A. 29 (1201). [G.e.]

**631.81—Sekera, F.** How is a fertilizer programme drawn up? *Phosphorsäure* 5, 1935 (132-146). [G.]

**631.81—Truffaut, G. ; Pastac, I.** Modern chemical fertilizers. *Rev. Chim. Indust.* 44, 1935 (2-10, 30-40). C.A. 29 (3083).

**631.81—Tropical Agriculture.** Manuring. *Trop. Agric. Trin.* 13, 1936 (253-255).

**631.81—Behrens, W. C.** The factors on which results with fertilizers depend. *Bodenk. Pfl.Ernähr.* 4, 1937 (64-72). [G.]

**631.81—Rankin, W. H.** Suitable fertilizer mixtures for different crops, including the functions of chief plant nutrients. *N.C. Agric. Expt. Sta. Agron. Inform. Circ.* 103, 1937, pp. 11. E.S.R. 77 (25).

**631.81 : 149.918.6—Lieber, H.** Practical experiences with biological-dynamic manuring. A scientific test of the results of biological-dynamic manuring. *Bad. Bauernstand* 2, 1934 (4). Z.P.D. 38 (190).

**631.81 : 149.918.6—Iversen, K.** Experiments with biological-dynamic manuring. *Tidsskr. Planteavl* 41, 1936 (210-222). [D.a.e.]

**631.81 : 539.215—Mehring, A. L. ; White, L. M., et al.** Effects of particle size on the properties and efficiency of fertilizers. *U.S.D.A. Tech. Bull.* 485, 1935, pp. 25.

# FERTILIZERS AND GENERAL AGRONOMY

**631.81 : 539.215—Sayre, C. B.** Granulated fertilizers have distinct merit. *Farm Res.* 3, No. 2, 1937 (1, 5, 12). E.S.R. 76 (762).

**631.81 : 541.144.7—Golovko, D. M.** The effect of nitrogenous and potassic nutrition on the intensity of photosynthesis in sunflowers. *Khim. Sotsial. Zemled.* No. 12, 1936 (44-60). [R.]

**631.81 : 551.58—Burgevin, H.** Action of fertilizers during dry years. *Cong. Chim. Indust. 14th Cong. Paris* 1934, pp. 93. C.A. 29 (5972).

**631.81 : 551.58—Latz, J.** Inter-relationships of weather, soils and manuring. *Kunstsdünger* 31, 1934 (353-355). *Chem. Zbl.* 1935 (3461). B.C.A. 55 (562).

**631.81 : 551.58—Opitz, K.** On the effect of fertilizers and nutrient balance in wet and dry years. *Ernähr. Pflanze* 31, 1935 (341-349). [G.e.]

**631.81 : 577.16—Ijdo, J. B. H.** The influence of manuring on the carotene and vitamin C content of the plant. *Thesis, Wageningen*, 1936, pp. 119.

**631.81 : 577.16—Scheunert, A. ; Schieblich, M.** The effect of manuring on the Vitamin B<sub>1</sub> content of wheat. *Bied. Zbl.* 8B, 1936 (120-124). [G.e.]

**631.81 : 581.116—Dominikovskiy, F. N.** The effect of fertilizers on the gas exchange activity of the stomata and on the transpiration of wheat plants. *Khim. Sotsial. Zemled.* No. 7-8, 1936 (51-58). [R.e.]

**631.81 : 581.13—Tompkins, L. E.** The effects of certain fertilizers upon the carbon dioxide intake of mature Jonathan apple leaves. *Proc. Amer. Soc. Hort. Sci.* 32, 1934 (97-100). C.A. 29 (7555).

**631.81 : 581.144.2—Sokolov, A. V.** The horizontal distribution of fertilizers in the soil and its importance as regards the aerial parts and the roots of plants. *Phosphorsäure* 4, 1934 (600-608). [G.]

**631.81 : 581.144.2—Sokolov, A. V.** Distribution of fertilizers in the soil and the yield of the roots and green parts of plants. *Landw. Nauch. Inst. Udob.* 126, 1935 (144-149). [R.g.]

**631.81 : 581.192—Tschumi, L. ; Stalé, J.** Influence of manuring on the alkalinity of plant ash. *Landw. Jahrb. Schweiz* 48, 1934 (34-48). *Chem. Zbl.* 1934 (830). B.C.A. 54 (422).

**631.81 : 581.192—Avdonin, N. S.** The effect of fertilizers on formation of sugar. *Khim. Sotsial. Zemled.* No. 2, 1935 (29-34). [R.e.]

**631.81 : 581.192—Jacob, A.** Influence of manuring on quality and suitability of foodstuffs and feeders. *Angew. Chem.* 48, 1935 (246-249). C.A. 29 (4505). B.C.A. 54 (547). [G.]

**631.81 : 581.192—Kanai, M. ; Takada, S.** Influence of N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O upon the amount and quality of agricultural products. I. *J. Sci. Soil Japan* 9, 1935 (301-312). [J.]

**631.81 : 581.192—Lebrun ; Radet.** Action of incomplete fertilizers on the yield and mineral composition of vegetables. *Ann. Agron.* 5, n.s., 1935 (541-552). [F.]

**631.81 : 581.192—Rackmann, K.** On relations between plant growth, soil and nutrient status in fertilizing. I. *Ztschr. Pflanz. Düng.* 40, 1935 (148-178). [G.]



# BIBLIOGRAPHY OF SOIL SCIENCE

**631.81 : 581.192**—Jacob, A. The effect of commercial fertilizers on the chemical composition, quality and nutritional value of crops. *Landbouwk. Tijdschr.* 48, 1936 (224-242). [G.]

**631.81 : 581.192**—Burström, H. Chemical-physiological analyses of certain liming and manurial investigations on acid loam soils. *Kgl. Landbr.Akad. Handl. Tidshr.* No. 3, 1937 (304-353). [Sw.g.]

**631.81 : 619**—Mangold, E. Have artificial manures a harmful influence on human and animal nutrition? *Ernähr. Pflanze* 31, 1935 (281-286).

**631.81 : 619**—Morath, M. The effect of commercial fertilizers on the health of game. *Ernähr. Pflanze* 32, 1936 (251-254).

**631.81 : 619**—Svanberg, O. Some observations on the effects of artificial fertilizers on the vegetation, health of domestic animals, and on the possibilities of the Swedish farmers being self-supporting. *Bied. Zbl.* 8B, 1936 (1-31). [G.e.]

**631.81 : 631.432.3**—Bobko, E. V. The circulation of fertilizers in the soil. *Trans. Int. Soc. Soil Sci. Soviet Sect. 1st Comm.* A2, 1934 (164-177). [F.]

**631.81 : 631.432.3**—Chernov, V.; Korshtsev, A. Movement of fertilizers in the soil. *Khim. Sotsial. Zemled.* No. 10, 1934 (19-23). *Pedology* 1935 (921).

**631.81 : 631.432.3**—Cooper, J. R. Penetration of fertilizers. *Ark. Agric. Expt. Sta. Bull.* 312, 1934 (46). C.A. 30 (1922).

**631.81 : 631.432.3**—McClure, G. M. Movement of fertilizer salts in soils. *Ohio Agric. Expt. Sta. Bull.* 532, 1934 (21-22). C.A. 28 (7399).

**631.81 : 631.432.3**—Korzhuev, A. S. Method of calculating the horizontal distribution of fertilizers in the soil. *Khim. Sotsial. Zemled.* Nos. 11-12, 1935 (85-90). [R.]

**631.81 : 631.432.3**—Lemmermann, O.; Behrens, W. U. The influence of manuring upon the permeability of the soil. *Ztschr. Pflanz. Düng.* 37, 1935 (174-192). C.A. 29 (6345).

**631.81 : 631.432.3**—Sayre, C. B. Where do fertilizers go after they are applied? *Farm Rec.* 1, No. 4, 1935 (2, 4). E.S.R. 73 (593).

**631.81 : 631.432.3**—Truffaut, G.; Schonberg, S. Fixation by the soil of soluble fertilizers. *Cong. Chim. Indust. 15th Cong. Brussels, 1935. Inst. Belge Amélior. Better. Pub.* 6, 1935 (461). [F.]

**631.81 : 631.432.3**—Bakulevskaia, T. S. Movement of fertilizers in the soil in relation to the time and depth of application. *Sotsial. Zem. Khoz.* No. 2, 1936 (40-52). [R.e.]

**631.81 : 631.432.3**—Brioux, G. Distribution of fertilizing elements with depth in old pasture soils. *Bull. Assoc. Franc. Et. Sol* 2, 1936 (294-298). [F.]

**631.81 : 631.432.3**—McGeorge, W. T.; Wharton, M. F. The movement of salt (alkali) in lettuce and other truck beds under cultivation. *Ariz. Agric. Expt. Sta. Bull.* 152, 1936 (389-438). E.S.R. 76 (9).

**631.81 : 636.084.22**—Mitchell, H. L.; Hosley, N. W. Differential browsing by deer on plots variously fertilized. *Black Rock Forest Pap.* 1, 1936 (24-27).

## FERTILIZERS AND GENERAL AGRONOMY

### 631.811 PLANT NUTRITION. NUTRIENT REQUIREMENTS

- 631.811**—**Stempel, B.** A new aspect on the laws governing plant growth and plant production. *Landw. Jahrb.* 80, 1934 (811–851). [G.]
- 631.811**—**Barbier, G.** Potassium, calcium, and magnesium nutrition of plants. *C.R. Acad. Agric.* 21, 1935 (416–422). B.C.A. 55 (114). [F.]
- 631.811**—**Lemmermann, O. ; Behrens, W. U.** On the significance of an appropriate nutrient ratio for plants. *Ztschr. Pflanz. Düng.* 37, 1935 (300–311). [G.]
- 631.811**—**Ogg, W. G.** Liming and manuring. *Trans. Northumb. Agric. Disc. Soc.* 1935, (51–54, 57–59). *Herb. Abs.* 6 (147).
- 631.811**—**Scholz, W.** The practical significance of the so-called harmony of nutrients. *Ztschr. Pflanz. Düng.* 38, 1935 (340–354). [G.]
- 631.811**—**Stempel, B.** Mutual replacement of growth factors in plant nutrition. *Sborn. Čsl. Akad. Zeměd.* 10, 1935 (327–332). B.C.A. 56 (167). (Cz.)
- 631.811**—**Tropical Agriculture.** Chemical problems in crop production. *Trop. Agric. Trin.* 12, 1935 (81–83).
- 631.811**—**Anderson, M. E.** Crop quality and health affected by soil conditions. *Amer. Fert.* 84, May 2, 1936 (24–26).
- 631.811**—**Heukeshoven, W.** The intake of nutrients during the plant's life. *ForschDienst.* 2, 1936 (12–23). [G.]
- 631.811**—**Macek, K.** The calculation of the effect of single nutrients and the value of fertilizing from deficiency experiments. *Sborn. Čsl. Akad. Zeměd.* 11, 1936 (549–555). (Cz.s.g.)
- 631.811**—**Morgan, S. R.** Plant nutrition. *J. Dept. Agric. S. Aust.* 40, 1936 (56–59).
- 631.811**—**Noack, K.** The application of chemistry and physiology in plant cultivation. *Angew. Chem.* 49, 1936 (673–681). C.A. 30 (6302). [G.]
- 631.811**—**Pierre, W. H. ; Broadfoot, W. ; Pohlman, G. G.** The acid-base balance of plants in relation to fertilization and nutrient absorption. *Abs. Pap. Meet. Div. Fert. Chem.* 1936. *Amer. Fert.* Sept. 19, 1936 (26).
- 631.811**—**Hutcheson, T. B.** Plant food needs of the soil-conserving crops. *Amer. Fert.* 87, Aug. 21, 1937 (10–11, 26). *Proc. Thirteenth Ann. Conv. Nat. Fert. Assoc.* 1937 (50–57).
- 631.811**—**Keller, H.** The carrying out of manuring plans on a physiological basis. *Bodenk. Pfl. Ernährung.* 4, 1937 (276–291). [G.]
- 631.811**—**Oplitz, K. ; Rath sack, K. ; Morgenroth, E.** The importance of nutrient ratio in mineral fertilization. *Bodenk. Pfl. Ernährung.* 4, 1937 (211–232). C.A. 31 (7579). [G.]
- 631.811**—**Stollenwerk, W.** The Donnan membrane equilibrium in the assimilation of fertilizer by plants. *Ztschr. Anorg. Allg. Chem.* 231, 1937 (192–196). C.A. 31 (3616). [G.]
- 631.811 : 541.132**—**Shestakov, A. G. ; Shvyndenkov, V.** The significance of sulphates and chlorides for the assimilation of nutrients and for the development of plants. *Trans. Int. Soc. Soil Sci. Soviet Sect. 4th Comm.* 1933 (216–220).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.811:577.8** -Minina, E.; Guseva, V. The effect of mineral nutrition on the determination of sex in plants. *Khim. Sotsial. Zemled.* No. 3, 1937 (47-60). [R.e.]
- 631.811:581.144.2** -Russell, E. J. Interactions between roots and soils. The growing plant: its action on the soil and on its neighbours. *Proc. 6th Int. Bot. Cong. Amsterdam* 2, 1935 (1-3).
- 631.811:581.144.2** -Akhromeiko, A. I. Exudation of mineral matter by plant roots. *Bull. Acad. Sci. (U.S.S.R.) (Cl. Sci. Math.) Biol. Ser.* No. 1, 1936 (215-254). [R.e.]
- 631.811:581.144.2** -Akhromeiko, A. I. The liberation of mineral matter by plant roots. *Ztschr. Pflanz. Düng.* 42, 1936 (156-186). [G.]
- 631.811:631.415.1** -Solberg, P. Interactions between nutrient salts and degree of acidity. *Nord. Jordbr.Forsk.* 5-7, 1935 (410-422). [N.]
- 631.811:631.416** -Bondorff, K. A. New points of view on the nutrient content of soils and nutrient uptake by plants. *Nord. Jordbr.Forsk.* 5-7, 1935 (152-159). [Da.]
- 631.811:631.416** -Gerlach, The replenishment of soil nutrients to plants. *Landw. Jahrb.* 82, 1935 (173-185). [G.]
- 631.811:631.416** -Lundegårdh, H. The influence of the soil upon the growth of the plant. *Soil Sci.* 40, 1935 (89-101).
- 631.811:631.416** -Penston, N. L. Return of mineral elements to the soil by plants. *Nature* 136, 1935 (268-269).
- 631.811:631.416** -Barbier, G. A study of the mineral nutrition of the plant as a function of the chemical composition of the medium. *Ann. Agron.* 6 (n.s.), 1936 (568-586). [F.]
- 631.811:631.416** -Rackmann, K. The relation between plant growth, soil and nutrient status in fertilizing. IV. *Ztschr. Pflanz. Düng.* 45, 1936 (305-326). [G.]
- 631.811:631.434** -McGeorge, W. T.; Breazeale, J. F. Some limiting factors in estimating the fertilizer requirements of a soil. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (131-134).
- 631.811:631.434** -Stephenson, R. E.; Schuster, C. E. Physical properties of soils that affect plant nutrition. *Soil Sci.* 44, 1937 (23-36).
- 631.811.1** -Dopter, P.; Frémont, T. Absorption of mineral nitrogen by cultivated crops. *Ann. Agron.* 5 (n.s.), 1935 (559-564). [F.]
- 631.811.1** -Dopter, P.; Frémont, T. Absorption of nitrate- and ammonia-nitrogen by the higher plants. *C.R.* 200, 1935 (170-172). [F.]
- 631.811.1** -Pardo, J. H. Ammonium in the nutrition of higher green plants. *Quart. Rev. Biol.* 10, 1935 (1-31).
- 631.811.1** -Dopter, P.; Frémont, T. Mineral nitrogen in the nutrition of cultivated plants. *C.R. Acad. Agric.* 22, 1936 (473-479). [F.]
- 631.811.1:546.27** -Schmidt, E. W. The influence of boron on nitrate metabolism. *Ber. Deut. Bot. Ges.* 55, 1937 (356-361). [G.]
- 631.811.1:546.711** -Bertrand, G. Influence of manganese on the nitrogen nutrition of plants. *C.R.* 21, 1935 (1215-1222). [B.C.A. 56 (170). [F.]
- 631.811.1:546.711** -Thérond, L. Contribution to the agromomic study of manganese. Its influence on the nitrogen nutrition

## FERTILIZERS AND GENERAL AGRONOMY

of plants. *C.R. Acad. Agric.* 21, 1935 (1215-1222). C.A. 30 (3149). [F.]

**631.811.1 : 631.584**—Nicol, H. The derivation of the nitrogen of crop plants with special reference to associated growth. *Biol. Rev.* 9, 1934 (383-410).

**631.811.1 : 631.584**—Nunn, W. M. Some new ideas on nitrogen nutrition of plants. *J. Dept Agric. W. Aust.* 11, 1934 (511-512). *Herb. Abs.* 5 (38).

**631.811.1 : 631.83**—Kwinichidze, M.; Byczkowski, A. The influence of potassium on the assimilation of nitrogen and the growth of papilionaceous plants. *Rocz. Nauk Roln.* 37, 1936 (145-172). [P.e.]

**631.811.1 : 631.83 : 631.85**—Turchin, F. V. Effect of potassium and phosphorus on utilization of nitrate- and ammonia-nitrogen by plants. *Trudy Nauch. Inst. Udob.* 1935 (33-50). B.C.A. 54 (1157). [G.]

**631.811.2 : 581.116**—Samokhvalov, G. K. The effect of the transpiration current, concentration and pH of the external solution on the absorption of phosphorus by plants. *Khim. Sotsial. Zemled.* Nos. 7-8, 1936 (26-40). [R.e.]

**631.811.3**—Matwald, K.; Frank, A. The part played by potash in the production of plant material in higher plants. *Ztschr. Pflanz. Düng.* 41, 1935 (8-28). [G.]

**631.811.3**—Rohde, G. The importance of potash for green leaf formation of the plant. *Ztschr. Pflkrank. Pflschutz.* 45, 1935 (499-510).

**631.811.3**—Frank, A. The part played by potash in the production of plant material of higher plants. Part II. Investigation of the behaviour of some cultivated plants under different light intensities and potash supply. *Bodenk. PflErnähr.* 1, 1936 (133-168). [G.]

**631.811.3**—Schmalfuss, K. Potash. A study of the cation problem in metabolism and plant nutrition. *Naturwiss. u. Landw.* No. 19, 1936, pp. 95.

**631.811.3 : 546.72**—Scharrer, K.; Schropp, W. Potassium iron antagonism in plants. *Ztschr. Pflanz. Düng.* 28A, 1933 (158-172). B.C.A. 52 (403). [G.]

**631.811.3 : 546.72**—Scharrer, K.; Schropp, W. Further investigations on the antagonism between potassium and iron in plant nutrition. *Ernähr. Pflanze* 32, 1936 (396-401).

**631.811.3 : 631.811.6**—Shibuya, K.; Torii, T. The antagonistic action between potash and alkaline earths for plant growth. *J. Sci. Soil Japan* 9, 1935 (411-424). [J.e.]

**631.811.6**—Delbet, P. Agriculture, kitchen and magnesium. *Bull. Acad. Méd. Paris* 111, 1934 (393-415). C.A. 29 (6999).

**631.811.6**—Beaumont, A. B.; Snell, M. E. The effect of magnesium deficiency on crop plants. *J. Agric. Res.* 50, 1935 (553-562).

**631.811.6**—Carolus, R. L.; Brown, B. E. Magnesium deficiency. I. The value of magnesium compounds in vegetable production in Virginia. *Va. Truck Expt. Sta. Bull.* 89, 1935 (1250-1288).

**631.811.6**—Frey, A.; Spindler, E. Effect of magnesia fertilizing on physiology and yield. *Bied. Zbl.* 64, 1935 (481-495). [G.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.811.6—Maugé, L. Vital necessity of magnesia. *Engrais* 50, 1935 (245, 247). C.A. 29 (5573). [F.]
- 631.811.7 8—Barbier, G. The effect of chlorides and sulphates on the mineral nutrition of the plant. *C.R. Acad. Agric.* 23, 1937 (700-706). [F.]
- 631.811.7—Vincent. Sulphates in agronomy. *Cong. Int. Tech. Chim. Indust. Agric. 4th Cong. Brussels* 2, 1935 (371-376). C.A. 30 (4968).
- 631.811.7—Vincent; Herviaux; Sarazin. Observations on the rôle of sulphur in manure in Brittany. *C.R. Acad. Agric.* 21, 1935 (775-779). [F.]
- 631.811.7—Chancrin, E. The problem of soil fertility. *Paris*, 1936, pp. 46.
- 631.811.7 Vincent; Sarazin; Herviaux. Sulphur in Breton agriculture. *Ann. Agron.* 6 (n.s.), 1936 (20-40). [F.]
- 631.811.7: 631.811.1—Bertrand, G.; Silberstein, L. Comparative sulphur and nitrogen content of plants grown in the same soil. *C.R. 202*, 1936 (261-264). *C.R. Acad. Agric.* 22, 1936 (90-93). [F.]
- 631.811.7: 631.811.1—Bertrand, G.; Silberstein, L. New investigations on the comparative content of S, P and N of plants grown on the same soil. *Ann. Agron.* 7 (n.s.), 1937 (333-335). [F.]
- 631.811.7: 631.811.2 Bertrand, G.; Silberstein, L. Comparative amounts of sulphur and phosphorus in plants grown on the same soil. *Ann. Agron.* 6 (n.s.), 1936 (183-186). [F.]
- 631.811.8—Masaeava, M. Chlorophobia of plants. *Bodenk. Pflernähr.* 1, 1936 (39-56). [G.]
- 631.811.9—Bobko, E. V. The importance to plants of the elements occurring in small amounts in soil. *Trans. Int. Soc. Soil Sci. Soviet Sect. 4th Congr.* 1933 (134-155). [G.]
- 631.811.9—Babicka, J. The growth substances. *Beih. Bot. Zbl.* 52A, 1934 (449-484). *Herb. Abs.* 5 (5). [G.]
- 631.811.9—Bobko, E.; Kedrov-Zikhman, O.; Dankova, M. The physiological rôle and the fertilizer effect of some minor elements, boron, copper and manganese under glasshouse conditions. *Khim. Sotsial. Zemel.* 2, 1934 (22-26). *Bred. Zbl.* 6 (258). [R.]
- 631.811.9—Harreveld-Lako, C. H. van. Water cultures with clay suspensions and with nutrient solutions. *Rec. Trav. Bot. Néerland.* 31, 1934 (27-112). C.A. 30 (4966).
- 631.811.9—Willis, L. G. Significance of minor plant foods. *Proc. Nat. Fert. Assoc.* 10, 1934 (113-115). E.S.R. 74 (462).
- 631.811.9—Bertram, P. The importance for plants of certain rare elements. *Cong. Int. Tech. Chim. Indust. Agric. 4th Cong. Brussels; Inst. Belge Amélior. Better. Pub.* 6, 1935 (404-405). [F.]
- 631.811.9—Derlinden, L. van. Rarer plant-food elements. *Fert. Fevd. j.* 20, 1935 (406).
- 631.811.9—Engels, O. Artificial fertilizers. *Kunststoffe* 32, 1935 (195-199, 227-231). C.A. 30 (2686).
- 631.811.9—Hitchcock, A. E.; Zimmerman, P. W. Absorption and movement of synthetic growth substances from soil as indicated by the responses of aerial parts. *Boyce Thompson Inst. Contr.* 7, 1935 (447-476).
- 631.811.9—Johnson, B. L. Minor mineral fertilizer materials. *Bur. Mines Inf. Circ.* 6830, 1935, pp. 35. C.A. 29 (4122).

## FERTILIZERS AND GENERAL AGRONOMY

- 631.811.9—Niethammer, A.** Up-to-date stimulation problems. *Ztschr. Pflanz. Düng.* 39, 1935 (45-61). [G.]
- 631.811.9—Pringsheim, E. G.** Growth substances in the soil. *Naturwissenschaften* 23, 1935 (197-198). C.A. 29 (4866).
- 631.811.9—Vinogradov, A. P.** Biogenetic migration of the rarer chemical elements. *Trans. Int. Soc. Soil Sci. Soviet Sect. A*, 1935 (64-69). [F.]
- 631.811.9—Young, R. S.** Certain rarer elements in soils and fertilizers and their rôle in plant growth. *Cornell Agric. Expt. Sta. Mem.* 174, 1935, pp. 70.
- 631.811.9—Askew, H. O.** Plant nutrition. Rôle of minor elements in plant health. *Orchard. N.Z.* 9, 1936 (303-305). *Hort. Abs.* 7 (112).
- 631.811.9—Brenchley, W. E.** The essential nature of certain minor elements for plant nutrition. *Bot. Rev.* 2, No. 4, 1936 (173-196). C.M.R. No. 353.
- 631.811.9—Bulletin of the Imperial Institute.** Some minor fertilizer materials. *Bull. Imp. Inst.* 34, 1936 (212-219).
- 631.811.9—Denny, F. E.** Mineral nutrition of plants. *Amer. Fert.* Feb. 8, 1936 (11).
- 631.811.9—Gaddum, L. W.; Rogers, L. H.** A study of some trace elements. *Fla. Agric. Expt. Sta. Bull.* 290, 1936, pp. 15.
- 631.811.9—Hill, H.** Minor elements affecting horticultural crops. *Sci. Agric.* 17, 1936 (148-153).
- 631.811.9—Jensen, P. Boysen.** The significance of growth substance in plant production. *Ztschr. Pflanz. Düng.* 43, 1936 (142-152). [G.]
- 631.811.9—Loehwing, W. F.; Bauguess, L. C.** Plant growth effects of heteroauxin applied to soil and plants. *Science* 84, 1936 (46-47). C.A. 30 (6488).
- 631.811.9—Muckenhirn, R. J.** Response of plants to boron, copper and manganese. *J. Amer. Soc. Agron.* 28, 1936 (824-842). C.A. 31 (199).
- 631.811.9—Scharrer, K.** The effect of microelements on plant growth. *Ztschr. Pflanz. Düng.* 44, 1936 (223-247). [G.]
- 631.811.9—Sellei, J.** Growth-accelerating and -inhibiting action of fluorescein on plants, with special reference to "Fotosensin". *Ztschr. Pflanz. Düng.* 43A, 1936 (321-340). B.C.A. 55 (612). [G.]
- 631.811.9—Veltman, G. H.** Physiological possibilities of promoting plant growth by chemical and physical substances which are not themselves plant nutrients. *ForschDienst.* 1, 1936 (836-848). *Hort. Abs.* 6 (229). [G.]
- 631.811.9—Veltman, G. H.** Physiological possibilities of the promotion of plant growth by means of chemical and physical materials which are not "nucleus nutrients". *ForschDienst.* 1, 1936 (916-920); 2, 1936 (26-38). *Hort. Abs.* 6 (229). [G.]
- 631.811.9—Baeyens, J.** Requirements of agricultural plants for minor and secondary elements. *Cong. Int. Tech. Chim. Indust. Agric. 5th Cong. Holland* 1, 1937 (477-488). B.C.A. 56 (956).
- 631.811.9—Bertram, P.** Minor elements in plant nutrition. *Cong. Int. Tech. Chim. Indust. Agric. 5th Cong. Holland* 1, 1937 (267-289). B.C.A. 56 (957).
- 631.811.9—Bobko, E. V.** The new elements which are indispensable to plants. 1. *Bodenk. Pflernähr.* 4, 1937 (327-333). [G.]

## BIBLIOGRAPHY OF SOIL SCIENCE

- 631.811.9—Collison, R. C.** Minor elements and crop fertilization. *N.Y. St. Agric. Expt. Sta. Circ.* 168, 1937 (1-13). C.A. 31 (7578).
- 631.811.9—Edelman, C. H.** The significance of minor elements for plant, animal and mankind. *Landbouw* 13, 1937 (2-21). [Duc.]
- 631.811.9—Rao, A. L. S.** Soil fertility and the rôle of trace elements. *Curr. Sci.* 6, 1937 (23).
- 631.811.9—Willis, L. G.; Piland, J. R.** Some recent observations on the use of minor elements in North Carolina agriculture. *Soil Sci.* 44, 1937 (251-258).
- 631.811.9—Wright, L. E.** The rôle of elements other than nitrogen, phosphorus and potassium in crop production. *Sci. Agric.* 17, 1937 (283-293).
- 631.811.9:539.16—Chouard, P.** The use of so-called radioactive fertilizer. *Bull. Soc. Nat. Hort. Fr.* 1, 1934 (489-490). C.A. 29 (3093).
- 631.811.9:539.16—Lepape, A.; Trannoy, R.** Fixation, by plants, of radium placed at their disposal in the soil. *C.R.* 199, 1934 (803-805). [F.]
- 631.811.9:546.15—McHargue, J. S.; Young, D. W.; Calfee, R. K.** The effect of certain fertilizer materials on the iodine content of important foods. *J. Amer. Soc. Agron.* 27, 1935 (559-565).
- 631.811.9:546.27—Bobko, E. V.; Matveeva, T. V.; Syvortkin, G. S.** Investigations on the rôle of boron in plants. *Ann. Agron.* 5 (n.s.), 1935 (801-803). [F.]
- 631.811.9:546.27—Fertilizer, Feeding Stuffs and Farm Supplies Journal.** Boron and plant life. *Fert. Feed. J.* 20, 1935 (720-724, 748-752).
- 631.811.9:546.27—Katalymov, M. V.** Boron as fertilizer. *Mener. Udob.* No. 1, 1935 (67-71). [R.]
- 631.811.9:546.27—Shkolnik, M. Y.** The need of plants for boron. *C.R. Acad. Sci. (U.S.S.R.)* 2, 1935 (167-173). [R.]
- 631.811.9:546.27—Bertrand, G.; Waal, H. L. de.** Investigations on the comparative boron content of plants grown on the same soil. *Ann. Agron.* 6 (n.s.), 1936 (537-541). [F.]
- 631.811.9:546.27—Löhnis, M. P.** Boron requirement and boron content of crops. *Chem. Weekbl.* 33, 1936 (59-61). B.C.A. 55 (341).
- 631.811.9:546.27—Dennis, R. W. G.** Boron and plant life. *Fert. Feed. J.* 22, 1937 (479-483, 507-511, 535-538, 573-576).
- 631.811.9:546.27—Dennis, R. W. G.** Relation of boron to plant growth. *Sci. Prog.* 32, 1937 (58-69). C.A. 31 (6796).
- 631.811.9:546.27—Dennis, R. W. G.; O'Brien, D. G.** Boron in agriculture. *W. Scot. Agric. Coll. Res. Bull.* 5, 1937, pp. 98.
- 631.811.9:546.27—Scharrer, K.; Schropp, W.** Further pot- and waterculture investigations on the effect of boron alone and in combination with iodine in fertilizers. *Phytopath. Ztschr.* 10, 1937 (57-78). [G.]
- 631.811.9:546.56—Russell, R.; Manns, T. F.** Copper sulphate as a crop nutrient: tobacco, cotton and corn (1934). *Trans. Peninsula Hort. Soc.* 1934 (97-129). B.C.A. 55 (385).

# FERTILIZERS AND GENERAL AGRONOMY

- 631.811.91:546.56**—Bryan, O. C. A summary of studies dealing with nutritive value of copper. *Citrus Indust.* 16, No. 7, 1935 (20-21).
- 631.811.9:546.56**—Zeniuk, A. V. Copper-containing wastes and low grade copper ores as fertilizers for swamp soils. *Khim. Sotsial. Zemled.* No. 5, 1935 (45-53). [R.]
- 631.811.9:546.56**—Giesecke, F.; Lesch, W. Experiment on the effect of a copper-containing lime on plant production. *Landw. VersSta.* 125, 1936 (229-234). [G.]
- 631.811.9:546.56**—Hill, M. F.; Bryan, O. C. The nutritive relation of copper on different soil types in Florida. *J. Amer. Soc. Agron.* 29, 1937 (809-814).
- 631.811.9:546.56**—Mulder, E. G. Significance of copper for biological processes. *Chem. Weekbl.* 34, 1937 (433). B.C.A. 56 (1937).
- 631.811.9:546.711**—Scharer, K.; Schropp, W. Water and sand culture experiments with manganese. *Ztschr. Pflanz. Düng.* 36A, 1934 (1-15). [G.]
- 631.811.9:546.711**—Schmidt, E. H.; Schueler, J. E.; Thomas, R. P. Manganese fertilization on Coastal Plain soils. *Mid. Agric. Expt. Sta. Bull.* 362, 1934 (395-396). C.A. 30 (5740).
- 631.811.9:546.711**—Haley, D. E. Manganese and some of its agricultural and biological relationships. *Amer. Fert.* 83, Oct. 19, 1935 (5-7, 28-30).
- 631.811.9:546.711**—Iyer, C. R. H.; Rajagopalan, R. Role of manganese in soil fertility. *Proc. Soc. Biol. Chem. India* 1, 1936 (12).
- 631.811.9:546.711**—Olsen, C. Absorption of manganese by plants. II. Toxicity of manganese to various species. *C.R. Lab. Carlsberg* 21, 1936 (129-143). [G.]
- 631.811.9:546.711**—Webster, M. E.; Robertson, I. M. Permanganates and plant growth. *Nature* 139, 1936 (71).
- 631.811.9:546.72**—Ehrenberg, P. Summarized review of the iron supply of cultivated plants. *Ztschr. Pflanz. Düng.* 45, 1936 (1-55). [G.]
- 631.811.9:546.72**—Moore, H. I.; Jones, A. P. Iron and plant growth. *Gard. Chron.* 99, 1936 (199-200). *Hort. Abs.* 7 (135).
- 631.811.9:546.881**—Shibuya, K.; Saeki, H. The effect of vanadium on the growth of plants (Part II). *J. Soc. Trop. Agric. Taiwan* 6, 1934 (721-729). [J.e.]
- 631.811.9:577.17**—Behrens, W. U. Effect of technical Prognon on plant growth. *Ztschr. Pflanz. Düng.* 39, 1935 (140-145). B.C.A. 54 (821). [G.]
- 631.811.9:577.17**—Zimmerman, P. W.; Hitchcock, A. E.; Wilcoxon, F. Several esters as plant hormones. *Boyce Thompson Inst. Contr.* 8, 1936 (105-112).
- 631.811.9:581.192**—Shcherbakov, A. P. Influence of microelements on the distribution of lime, magnesia and phosphate in plants. *Ztschr. Pflanz. Düng.* 39, 1935 (129-140). [G.]
- 631.811.9:581.192**—Shcherbakov, A. P. The influence of minor elements on the distribution of Ca, Mg and  $P_2O_5$  in plants. *Khim. Sotsial. Zemled.* No. 7, 1935 (34-41). [R.]



## BIBLIOGRAPHY OF SOIL SCIENCE

- 631.811.9:631.427.2** Harmsen, G. W.; Verweel, H. J. The influence of growth-promoting substances upon the determination of bacterial density by the plating-method. *Zbl. Bakt.* 95, 1936 (134-150). [E.]
- 631.811.9:631.461**—Clark, N. A. One aspect of the interrelation of soil bacteria and plant growth. *J. Amer. Soc. Agron.* 27, 1935 (100-103).
- 631.811.9:631.461** Dopter, P. Action of secondary elements in Chili saltpetre on the microbiological activity of soils. *Rech. Fert. Sta. Agron. Douai* 1935, p. 50. P.I.S. 10 (175).
- 631.811.9:631.821.1** Khalisev, A. A.; Katalymov, M. V. Micro elements. *Trudy Nauch. Inst. Udob.* 1935 (51-65). B.C.A. 54 (1156). [G.]
- 631.811.91:581.116**—Kramer, P. The relation between rate of transpiration and rate of absorption of water in plants. *Amer. J. Bot.* 24, 1937 (10-15).
- 631.811.91:631.434**—Nelson, G. H. Water, soils and plant growth. *Minn. Hort.* 62, 1934 (65, 68). E.S.R. 73 (779).
- 631.811.91:631.67**—Bosman, F. H.; Coetzee, P. J. S. Transpiration as a factor in irrigation practice. *Farm. S. Afric.* 10, 1935 (381).
- 631.811.91:631.67**—Singh, B. N.; Singh, R. B.; Singh, K. Investigations into the water requirements of crop plants. *Proc. Indian Acad. Sci.* 1, No. 9, Sect. B, 1935 (471-495). E.S.R. 73 (466).
- 631.811.92**—Livingston, B. E.; Beall, R. Soil as a direct source of carbon-dioxide for ordinary plants. *Plant Physiol.* 9, 1934 (237-259). B.C.A. 53 (977).
- 631.811.93** Sreenivasan, A. Role of silica in plant nutrition. *Curr. Sci.* 3, 1934 (193-197). B.C.A. 54 (73).
- 631.811.93** Sreenivasan, A. Investigations on the rôle of silicon in plant nutrition. Part I. On the nature of interaction between soil and soluble silicates. *Proc. Indian Acad. Sci.* 1, 1935 (607-632).
- 631.811.93** Sreenivasan, A. Investigations on the rôle of silicon in plant nutrition. Part II. Adsorption of silica in soluble forms by colloidal oxides of iron and aluminium. *Proc. Indian Acad. Sci.* 2B, 1935 (201-212).
- 631.811.93**—Litkevich, S. V. The effect of silicic acid on plant development. II. *Trudy LOVIL.A.I* 45, 1936 (29-54). [R.]
- 631.811.93**—Okawa, K. Investigation on the physiological action of silicic acid for plants. *J. Sci. Soil Japan* 10, 1936 (95-110). [J.e.]
- 631.811.93:631.811.2**—Okawa, K. Investigation on the physiological action of silicic acid in plants. *J. Sci. Soil Japan* 11, 1937 (23-36). [J.e.]

## 631.812/6 PREPARATION, PROPERTIES AND APPLICATION OF FERTILIZERS

- 631.812**—Tokuoka, M. Hygroscopicity of fertilizers. *Bull. Agric. Chem. Soc. Japan* 10, 1934 (148). C.A. 28 (7399).
- 631.812**—Baranov, P. A. Colouring mineral fertilizers. *Khim. Sotsial. Zemled.* No. 1, 1935 (77-84). [R.]

## FERTILIZERS AND GENERAL AGRONOMY

- 631.812--Hance, F. E.** The preparation of fertilizer briquettes and their utilization in general agricultural practice. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (258-260).
- 631.812--Akhurst, C. G.** A note on the mixing of fertilizers. *J. Rubber Res. Inst. Malaya* 7, 1936 (105-106).
- 631.812 Pestov, N. E.; Glazova, T. V.** Hygroscopicity of fertilizers. *Zh. Khim. Prom.* 13, 1936 (868). B.C.A. 56 (71).
- 631.813--Engels, O.** The physiological reaction of artificial fertilizers. *Deut. Landw. Pr.* 62, 1935 (13-14). [G.]
- 631.813--Tremals, A. M.** Importance of the physiological reaction of commercial fertilizers. *Proc. Cuban Sug. Tech. Assoc.* 8, 1934 (76-81). F.a.S. 31 (149). C.A. 31 (4039).
- 631.813--Koritskaia, T. D.** The significance of uniting different plant nutrients in one fertilizer grain. *Trudy Nauch. Inst. Udob.* 126, 1935 (150-154).
- 631.813--Mann, H. B.; Skinner, J. J.** Fertilizer reaction, soil amendments and crop production. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (196-198).
- 631.813--Ruprecht, R. W.** Neutral fertilizers, what they are and how they act. *Citrus Indust.* 16, No. 2, 1935 (6-7).
- 631.813--Taylor, J. R.; Pierre, W. H.** Non-acid-forming mixed fertilizers: I. Their effect on certain chemical and biological changes in the soil-fertilizer zone and on plant growth. *J. Amer. Soc. Agron.* 27, 1935 (623-641).
- 631.813--Taylor, J. R.; Pierre, W. H.** The value of different basic materials of different degrees of fineness in the production of non-acid-forming fertilizers. *Proc. First Ann. Meet. Comm. Fert. Amer. Soc. Agron.* 1935 (24-32). C.A. 30 (4972).
- 631.813--Cook, H. L.; Conner, S. D.** A study of the basicity of dolomite, rock phosphate, and other materials, in preparing non-acid-forming fertilizers. *J. Amer. Soc. Agron.* 28, 1936 (843-855).
- 631.813--Utsch, W.** Investigations on mixtures of basic slag with ammonium salts. *Ztschr. Pflanz. Ding.* 44, 1936 (193-223). [G.]
- 631.813--Weigert, J.; Weizel, H.** Damage to crop plants resulting from the injudicious use of farmyard and commercial fertilizers. *Prakt. Bl. Pflanz.* 14, 1936 (213-236). *Herb. Abs.* 7 (175).
- 631.813--Zimmerley, H. H.** New developments in fertilizer use. *Amer. Fert.* 85, Aug. 22, 1936 (5-7, 24-25).
- 631.815--Kudrin, S. A.; Rubinchik, Y. A.** The durability of fertilizer applications. *Bull. Srednec. Nauch. Inst. Khlopkov.* No. 1, 1934 (48-55). C.A. 29 (875).
- 631.815--Cook, R. L.; Millar, C. E.** The residual effect of fertilizers. *Much. Agric. Expt. Sta. Quart. Bull.* 18, 1936 (227-234).
- 631.816.2--Sabinin, D. A.** On the influence of technique and time of application of fertilizers on the nature of plants. *C.R. Acad. Sci. (U.S.S.R.)* 1934 (2-5). R.F.
- 631.816.2--Truffaut, G.; Pastac, I.** The chemistry of semi-diffusible fertilizer salts. *Cong. Chim. Indust. 15th Cong. Brussels*, 1935. *Inst. Belge Amélior. Better. Pub.* 6, 1935 (461-462). [F.]
- 631.816.2--Avdonin, N. S.** Time and methods of application of fertilizers. *Khim. Sotsial. Zemled.* No. 6, 1936 (3-22). [R.g.]

## BIBLIOGRAPHY OF SOIL SCIENCE

- 631.816.2—Rakhleev, B. D.** Times and depths of application of fertilizers. *Sotsial. Zern. Khoz.* No. 2, 1936 (53-62). [R.e.]
- 631.816.3—Sokolov, A. V.** Microdynamical method of investigating the fate of fertilizers in soils. *Trans. Int. Soc. Soil Sci. Soviet Sect. 4th Comm.* 1933 (237-240).
- 631.816.3—Baronov, I. B.; Evert, A. F.** Physico-mechanical properties of fertilizers and the work of mechanical spreaders. *Zh. Khim. Prom.* 12, 1935 (143-150). [C.A. 29 (5568).]
- 631.816.3—Greve, H. H.** Three different ways of transporting manure. *Landw. Fachpresse Tschech.* 13, 1935 (11). Z.P.D. 41 (102).
- 631.816.3—King, N. J.** A fertilizer gun. *Cane Grow. Quart. Bull.* 3, 1935 (30-31).
- 631.816.3—Korolev, L. I.** Field experiments on methods of application of compound fertilizers to potatoes and sugar beet. *Trudy Nauch. Inst. Udob.* 126, 1935 (129-134). [R.g.]
- 631.816.3—Korzhuev, A. S.** Methods and time of application of fertilizers. *Khim. Sotsial. Zemled.* No. 4, 1935 (23-28). [R.g.]
- 631.816.3—Sabinin, D.; Minina, H.** Physiological principles of the technique of fertilizer distribution. *Ztschr. Pflanz. Düng.* 40, 1935 (1-47). [G.]
- 631.816.3—Sayre, C. B.; Clark, A. W.** Rates of solution and movement of different fertilizers in the soil and the effects of the fertilizers on the germination and root development of beans. *N.Y. Agric. Expt. Sta. Tech. Bull.* 231, 1935, pp. 67.
- 631.816.3—Boischot, P.; Drouineau, G.** The use of fertilizers in solution. *C.R. Acad. Agric.* 22 (979-984). [F.]
- 631.816.3—Cummings, G. A.** New developments in fertilizer placement research. *Agric. Engng.* 17, 1936 (461-464).
- 631.816.3—Husbandry.** Fertilizers with the seed. *Husbandry* 6, 1936 (56-57). [J.H.B. 5 (B 29).]
- 631.816.3—McMillan, J. A.; Hanley, F.** The effect of sowing fertilizers in contact with the seed of barley and of sugar-beet. *J. Min. Agric.* 42, 1936 (1205-1211).
- 631.816.3—Smalley, H. K.** The practical side of fertilizer application investigations. *Amer. Fert.* 84, April 4, 1936 (7-8, 26).
- 631.816.3—Watson, J. A. Scott.** The placement of fertilizers. *J. Min. Agric.* 42, 1936 (1155-1159).
- 631.816.3—Blair, W. S.** Methods of applying commercial fertilizers. *Sci. Agric.* 17, 1937 (279-282).
- 631.816.3—Rautenberg, E.** The effect of plant nutrients when placed in nests uniformly distributed throughout the soil. *Ernähr. Pflanze* 33, 1937 (201-208). [G.esp.]
- 631.816.3—Spencer, V. E.** Some results of differential feeding by corn root systems. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (269-270).
- 631.816.3—Torstensson, G.** Distribution of fertilizer phosphates in arable soils with different methods of application. *Lantbruksk. Ann.* 4, 1937 (191-219). [G.sw.]

## 631.82 MINERAL AMENDMENTS (OTHER THAN N, P, K)

- 631.821.1—Shcherba, S. V.** The results of prolonged experiments on soil liming. *Trans. Int. Soc. Soil Sci. Soviet Sect. 4th Comm.* 1933 (243-245).

# FERTILIZERS AND GENERAL AGRONOMY

- 631.821.1—Åslander, A.** The problem of liming and how it should be investigated in Sweden. *Nord. JordbrForsk.* 3-4A, 1934 (119-134). [Sw.]
- 631.821.1—Bauer, R.** Three-year comparative liming experiments. *Landeskultur* 2, 1935 (66). Z.P.D. 41 (106).
- 631.821.1—Jensen, S. T.** The object of liming. *Nord. Jordbr-Forsk.* 1935 (1-16). [N.]
- 631.821.1—Tuorila, M.** The lime question illustrated by field experiments. *Nord. JordbrForsk.* 5-7, 1935 (397-410). [Sw.]
- 631.821.1—Kuron, H.** The decomposition of lime in the soil. *Landw. Jahrb.* 83, 1936 (601-710). [G.]
- 631.821.1—Wlodek, J.; Czynciel, J., et al.** Preliminary experiments on the effect of liming. *Rocz. Nauk Roln.* 36, 1936 (331-348). [P.]
- 631.821.1—Garner, H. V.** The agricultural outlet for lime. *Cement* 10, 1937 (108-110). C. A. 31 (5499).
- 631.821.1—Whelan, L. A.** The effects of lime on the soil. *Scot. J. Agric.* 20, 1937 (258-263).
- 631.821.1 : 545—Popp, M.** Evaluating liming materials. *Deut. Landw. Pr.* 62, 1935 (487-488). C. A. 30 (1495).
- 631.821.1 : 545—Tschumi, L.; Stalé, J.** Estimation of the value of different limestones used as amendments. *Ann. Agric. Suisse* 7, 1935 (726-734). [F.]
- 631.821.1 : 545—Bouyoucos, G. J.** A new method for testing the purity of marls and limestones. *Soil Sci.* 41, 1936 (131-133).
- 631.821.1 : 546.27—Bobko, E. V.; Syvorotkin, G. S.** The effect of boron on plant growth on limed soils. *Khim. Sotsial. Zemled.* No. 8, 1935 (17-22). [R.]
- 631.821.1 : 546.27—Katalymov, M. V.** The harmful effect of overliming acid soils. *Khim. Sotsial. Zemled.* No. 2, 1935 (42-48). [R.]
- 631.821.1 : 546.27—Talybly, G. A.** The importance of microelements and the Ca Mg ratio for plant growth when liming acid soils. *Ztschr. Pflanz. Düng.* 39A, 1935 (257-264). [G.]
- 631.821.1 : 546.27—Talybly, G. A.** The significance of the minor elements and of the relation of Ca to Mg for plant growth on overlimed acid soils. *Khim. Sotsial. Zemled.* No. 7, 1935 (41-54). [R.]
- 631.821.1 : 546.27—Abaturova, E. A.** The causes of the negative effect of excessive amounts of lime on acid soils. *Khim. Sotsial. Zemled.* No. 5, 1936 (40-49). [R.]
- 631.821.1 : 546.27—Bobko, E. V.; Syvorotkin, G. S.; Filipov, A. I.** The new elements which are indispensable to plants. II. *Bodenk. Pflernähr.* 4, 1937 (334-339).
- 631.821.1 : 546.27—Naftel, J. A.** Soil liming investigations: V. The relation of boron deficiency to over-liming injury. *J. Amer. Soc. Agron.* 29, 1937 (761-771).
- 631.821.1 : 546.27—Odellen, M.** Boron deficiency as a cause of growth injury of barley after heavily liming sphagnum-peat. *Meld. Norges LandbrHøisk.* 17, 1937 (187-206). [N.]
- 631.821.1 : 546.331.31—Turner, P. E.** Lime-salt experiment. *Proc. Sug.-Cane Investg. Cttee. Trin.* 4, 1932 (40-41, 75). C. A. 29 (1921).

# BIBLIOGRAPHY OF SOIL SCIENCE

**631.821.1:581.192—Kedrov-Zikhman, O.** The behaviour of cultivated crops towards soil acidity in relation to liming. *Pedology* 4, 1933 (287-301). [*Bied. Zbl.* 5 (510). {R.}]

**631.821.1:581.192—Malac, B.** Influence of liming on the reaction of plant saps. *Vest. Čsl. Akad. Zemřd.* 10, 1934 (426-430). B.C.A. 54 (690).

**631.821.1:581.192—Naftel, J. A.** Soil liming investigations. IV. The influence of lime on yields and on the chemical composition of plants. *J. Amer. Soc. Agron.* 29, 1937 (537-547).

**631.821.1:631.411.1—Kulitans, P.** The influence of liming on yields from sandy soils and peat-sand soils in Ramava, 1926-30. *Acta Univ. Lat. Lauksaimn. Fakult. Ser.* 2, Nos. 1-4, 1931 (1-59). C.A. 30 (2306). {L.g.}]

**631.821.1:631.413.41—Hudig, J., et al.** Liming experiments. I. The introduction of Ca-ions into the absorption complex of a soil and a porous calcium aluminosilicate. *Meded. Landbouhgensch. Wageningen* 37, 1933, pp. 59.

**631.821.1:631.413.41—Joret, G.** Use of improvers and lime fertilizers on loam soils. *Cong. Chim. Indust.* 14th Cong. Paris, 1934, pp. 5. {F.}]

**631.821.1:631.416—Ellett, W. B.; Hill, H. H.** The effects of certain lime materials on the leachings from Frederick silt loam soil. *Va. Agric. Expt. Sta. Tech. Bull.* 61, 1937, pp. 19.

**631.821.1:631.432.3—Weidemann, A. G.** Movement of lime in soils as determined by soil reaction. *Mich. Agric. Expt. Sta. Bull.* 18, 1936 (254-259).

**631.821.1:631.582—Alabama Agricultural Experiment Station.** The value of lime in a two-year rotation on Sand Mountain. A progress report. *Ala. Agric. Expt. Sta. Circ.* 75, 1936, pp. 11. E.S.R. 76 (310).

**631.821.1:631.811.2—Pierre, W. H.; Browning, G. M.** The temporary injurious effect of excessive liming of acid soils and its relation to the phosphate nutrition of plants. *J. Amer. Soc. Agron.* 27, 1935 (742-759).

**631.821.1:631.816.3—Hudig, J.** The distribution of lime fertilizers in the soil. *Landbouwk. Tijdschr.* 47, 1935 (1-20).

**631.821.1:631.816.3—Albrecht, W. A.** Drilling fine limestone for legumes. *Missouri Agric. Expt. Sta. Res. Bull.* 367, 1936, pp. 20.

**631.821.1:631.84—Schmitt, L.** Limestone in artificial manure. *Mitt. D.L.G.* 51, 1936 (965-966). C.A. 31 (2728). {G.}]

**631.821.2—Ratner, E. I.** The probable use of gypsum, phosphogypsum and lime residues as fertilizers. *Trudy Nauch. Inst. Udob.* No. 101, 1934 (128-136). C.A. 29 (1568).

**631.821.2—Willis, L. G.** The value of gypsum as a supplement to a concentrated fertilizer. *N.C. Agric. Expt. Sta. Bull.* 299, 1934, pp. 9. E.S.R. 73 (20).

**631.821.2—Afanas'ev, I. A.** Gypsum and phosphogypsum as fertilizers. *Khim. Sotsial. Zemřd.* No. 10, 1936 (24-33). {R.e.}]

**631.821.2:631.67—Mozheiko, A. M.** Lime and gypsum fertilization of southern soils of the Ukraine in conjunction with other methods of yield increase. *Trans. 6th Mendeleev Cong. Appl. Chem.* 1932, 2, 1935 (75-76). C.A. 30 (4968).

# FERTILIZERS AND GENERAL AGRONOMY

- 631.821.2 : 631.67**—Novikov, P. M. Lime and gypsum for irrigated soils. *Pedology* No. 3, 1937 (381-390). [R.e.]
- 631.822**—Scharrer, K.; Schropp, W. Manurial experiments with Obolen sandstone. *Landw. VersSta.* 416, 1933 (227-244).
- 631.822**—Meyer, L. Humus-clay mixtures as a plant nutrient base and as a soil improver. *Ztschr. Pflanz. Düng.* 39, 1935 (211-224). [G.]
- 631.822**—Utescher, K. Marine silt from the Baltic and North Sea. *Ztschr. Pflanz. Düng.* 37, 1935 (288-300). [G.]
- 631.822**—Herrmann, R. Study of the effect of Naaki fertilizer supplement. *Ztschr. Pflanz. Düng.* 41, 1936 (257-274). [G.]
- 631.822**—Terlikowski, F.; Byczkowski, A. The effect of clay occurring in potassium fertilizers on plants. *Rocz. Nauk Roln.* 37, 1936 (223-260). [Pl.g.]
- 631.822**—Várallyay, G. Possibilities of using marl for soil improvement on the Hungarian Plain. *Mezőg. Kutat.* 9, 1936 (139-144). C.A. 30 (6106). [H.]
- 631.822**—Zaitseva, K. N. The effect of planing the soil on soil fertility. *Sotsial. Zern. Khoz.* No. 4, 1936 (34-39). [R.]
- 631.822**—Brüne, F.; Husemann, C. Field tests on the practical significance of "Kuhlerde" amelioration in the North Sea marshes. *Landw. Jahrb.* 84, 1937 (127-158). [G.]
- 631.822 : 545**—Turk, L. M. An apparatus for determining purity of marls. *Mich. Agric. Expt. Sta. Quart. Bull.* 18, 1935 (29-32). E.S.R. 74 (168).
- 631.822 : 551.763**—Twenhofel, W. H. The greensands of Wisconsin. *Econ. Geol.* 31, 1936 (472-487). C.A. 30 (8104).
- 631.822 : 552.323**—Oberhauser, F. Quizápu and its volcanic ash. *An. Fac. Filos. Univ. Chile* 1, 1934 (77-85). B.C.A. 55 (71).
- 631.822 : 552.323.5**—Albert, R. Research on a method of manuring of lasting efficiency with basalt grit. *Forstarchiv* 12, No. 10, 1936 (158-162). C.M.R. 1936, No. 464.
- 631.822 : 552.323.5**—Hilf, H. H. Basalt grit—a long enduring manure for poor sands. *Forstarchiv* 13, No. 6-7, 1937 (113-116). C.M.R. No. 14 (6).
- 631.822 : 631.43**—Nagel, W. Physical and chemical changes in the state of the sorption complex of the North Sea soils caused by amelioration with "Blausand". *Kühn-Arch.* 39, 1935 (247-276). [G.]
- 631.822 : 631.445.14**—Emmert. Is it possible to improve moorland by spreading earth. *Deut. LandeskZtg.* 4A, No. 4, 1935 (17-19). *Herb. Abs.* 5 (270).
- 631.822 : 631.445.14**—Schirmer, M. The latest experience of Rimpau sanded cultures with the aid of the Arbeitsdienst. *Deut. LandeskZtg.* 4A, No. 2, 1935 (6-10). *Herb. Abs.* 5 (269).
- 631.822 : 631.616**—Kathiens, H. Three year investigations on "Blausand" amelioration on the North Sea marshes. *Kühn-Arch.* 42, 1936 (61-109).
- 631.824**—Brioux, C.; Jouis, E. The fertilizing effect of magnesium. *Ann. Agron.* 5 (n.s.), 1935 (190-204).
- 631.824**—Chiappelli, R. Magnesium fertilizers. *G. Riscolt.* 25, 1935 (249-250). [I.]
- 631.824**—Popp, M.; Contzen, J.; Nieschlag, F. Further experiments on the fertilizer effect of magnesium. *Ztschr. Pflanz. Düng.* 40, 1935 (323-357). [G.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.824—Ratner, E. I. Magnesium silicate (dunite) as fertilizer for acid soils. *Miner. Udob.* 2, 1935 (73-78). [R.]
- 631.824—Willis, L. G. Magnesium deficiency introduces a major fertilizer problem. *Fert. Rev.* 10, 1935 (6-7).
- 631.824—Beraner, F. The effect of magnesium. *Bodenk. Pfl(Ernähr.* 1, 1936 (175-184). [G.]
- 631.824—Javillier. Use of magnesium compounds in agriculture. *Chim. Indust.* 35, 1936 (274-284). B.C.A. 55 (341).
- 631.824—Popp, M. The fertilizer effect of magnesia. *Landw. VersSta.* 124, 1936 (129-152). [G.]
- 631.824—Schmitt, L. New and old ideas about magnesia fertilizing. *Ztschr. Pflanz. Düng.* 42, 1936 (129-143). [G.]
- 631.824—Eckstein, O. Magnesium-containing fertilizers. *Cong. Int. Tech. Chim. Indust. Agric. 5th Cong. Holland*, 1, 1937 (233-241). B.C.A. 56 (956).
- 631.824—Taylor, E. M.; Howatt, J. L. Magnesium in field crop production in New Brunswick. *Sci. Agric.* 17, 1937 (294-298).
- 631.824 : 539.215—Siems, H. B.; Batton, H. C. The rate of reactivity of dolomite from various sources and of varying degrees of fineness as determined by chemical methods. *Proc. First Ann. Meet. Chic. Fert. Amer. Soc. Agron.* 1935 (10-14).
- 631.824 : 631.415.2—Belsky, V. P. Dunite as a soil ameliorant. *Trudy Nauch. Inst. Udob.* No. 129, 1936 (65-79). [R.g.]
- 631.824 : 631.415.2—Ratner, E. I. The utilization of dunite for the amelioration of acid soils. *Trudy Nauch. Inst. Udob.* No. 129, 1936 (16-38). [R.g.]
- 631.824 : 631.812—Pestov, N. E. Production of magnesium sulphate fertilizers from rocks containing magnesium silicates. *Miner. Udob.* 1, No. 2, 1935 (50-52). B.C.A. 56 (166).
- 631.824 : 631.813—Ross, W. H.; Beeson, K. C. Reaction of basic materials in fertilizer mixtures. *Proc. First Ann. Meet. Comm. Fert. Amer. Soc. Agron.* 1935 (24-32). C.A. 30 (4972).
- 631.824 : 631.813—Taylor, J. R.; Pierre, W. H. Non acid-forming mixed fertilizers: II. The value of dolomitic limestone supplements of different degrees of fineness as measured by the increase in water-soluble magnesium in the soil. *J. Amer. Soc. Agron.* 27, 1935 (764-773).
- 631.824 : 631.813—Hester, J. B. Influence upon the soil reaction and vegetable crop production of dolomitic limestone of different degrees of fineness in formulating non-acid forming fertilizer mixtures. *Abs. Pap. Meet. Div. Fert. Chem.* 1936. *Amer. Fert. Sept.* 19, 1936 (26).
- 631.824 : 631.821.1—Brioux, C.; Jouis, E. Comparative actions of lime and magnesia on the mobilization of the organic and mineral reserves of the soil. *Cong. Chim. Indust.* 14th Cong. Paris, 1934, pp. 6. C.A. 29 (5970).
- 631.824 : 631.821.1—Dean, H. L. Some bacteriological and chemical effects of calcium and magnesium limestones on certain acid Iowa soils. *Iowa St. Coll. J. Sci.* 10, 1935 (69-71). C.A. 30 (1165).
- 631.824 : 631.821.1—Odland, T. E.; Knoblauch, H. C. A 25-year field comparison of high-magnesium and high-calcium limes. *J. Amer. Soc. Agron.* 27, 1935 (216-221). B.C.A. 54 (646).

## FERTILIZERS AND GENERAL AGRONOMY

**631.824 : 631.821.1—Blanck, E. ; Schorstein, H.** The fertilizing action of calcined, siliceous, dolomitic limestone. *J. Landw.* 84, 1936 (89-96). C.A. 30 (7267). [G.]

**631.824 : 631.821.1—Dean, H. L. ; Walker, R. H.** Some bacteriological and chemical effects of calcium and magnesium limestones on certain acid Iowa soils. *Iowa Agric. Expt. Sta. Res. Bull.* 196, 1936 (157-182).

**631.824 : 631.821.1—Nafel, J. A.** Soil liming investigations: III. The influence of calcium and a mixture of calcium and magnesium carbonates on certain chemical changes of soils. *J. Amer. Soc. Agron.* 29, 1937 (526-536).

**631.824 : 631.851—Cook, H. L. ; Conner, S. D.** Relative values of dolomite and raw phosphate as neutralizers of acid fertilizers as affected by a modified Neubauer cropping. Preliminary report. *Proc. First Ann. Meet. Comm. Fert. Amer. Soc. Agron.* 1935 (4-9). C.A. 30 (4971).

**631.829—Riedel, F.** Comparative experiments on carbon balance with CO<sub>2</sub>-manuring. *Fortschr. Landw.* 9, 1933 (196-200). [G.]

**631.829—Johnston, E. S.** Aerial fertilization of wheat plants with carbon dioxide. *Smithson. Misc. Coll.* 94, No. 15, 1935, pp. 9.

**631.829—Ravenna, C. ; Rogai, F.** Experiments on atmospheric fertilizing. III. *Ist. Agrar. Pisa Boll.* 11, 1935 (511-514). P.I.S. 12 (59). [I.]

**631.829—Coupin, H.** Aerial manuring. *Nature, Paris*, No. 2981, 1936 (52-54). [F.]

**631.829—Ozerov, G. V.** Carbonic acid as fertilizer. *Soviet. Subtrop.* No. 4, 1936 (47-51). R.e.

**631.829—Schneller, E.** Fog as cause of damage to buildings and rock decomposition, and its importance for agriculture. *Chem. Ztg.* 61, 1937 (454-455). C.A. 31 (7579).

**631.829 : 631.461.1/3—Smith, F. B. ; Brown, P. E. ; Millar, H. C.** Some effects of carbon dioxide on the decomposition of organic matter and the accumulation of nitrates in the soil. *Soil Sci.* 43, 1937 (15-23).

**631.829 : 631.416.2—Smith, F. B. ; Brown, P. E. et al.** The effect of carbon dioxide on soil reaction and on the solubility of phosphorus in soils. *Soil Sci.* 43, 1937 (93-104).

## 631.83 POTASH FERTILIZERS

**631.83—Belsky, V. P.** Action of various potassium fertilizers. *Miner. Udob.* 1, No. 3, 1935 (56-65). B.C.A. 56 (170).

**631.83—Belsky, V. P.** New data on the action of various potash fertilizers. *Miner. Udob.* 3, 1935 (56-65). [R.]

**631.83—Byczkowski, A.** Investigations on the mechanism of potash fertilizers on the yield of plants (barley). *Rocz. Nauk Roln.* 37, 1936 (37-134). [P.l.g.]

**631.83—Filutowicz, A.** On the manurial value of some potassium products. *Rocz. Nauk Roln.* 37, 1936 (135-144). [P.l.g.]

**631.83—Cowie, G. A.** Potash manuring as a factor in crop production. *Fert. Feed. J.* 22, 1937 (33-34).

**631.83—Witteveen, H. J.** The potassium problem. *Landbouwk. Tijdschr.* 49, 1937 (251-257). [D.u.g.]



# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.83 : 535.21—Scharrer, K. ; Schropp, W. Further investigations on the effect of the potassium ion on plant growth in the absence of sufficient light. *Ernähr. Pflanze* 32, 1936 (293-300). [G.]
- 631.83 : 545—Kamatani, E. On methods for the determination of water-soluble potassium in compound fertilizers. *J. Sci. Soil Japan* 9, 1935 (297-300). [J.]
- 631.83 : 545—Kraybill, H. R. ; Thornton, S. F. Comparative study of the official and a modified method for determining potash in mixed fertilizers. *J. Assoc. Off. Agric. Chem.* 18, No. 2, 1935 (260-281). E.S.R. 75 (299).
- 631.83 : 545—Scharrer, K. ; Schorstein, H. The determination of potash in mixed fertilizers. *Landw. VersSta.* 123, 1935 (227-234). [G.]
- 631.83 : 545—Thornton, S. F. ; Kraybill, H. R. Available potash content of fertilizer residues extracted according to the official method. *J. Assoc. Off. Agric. Chem.* 18, No. 2, 1935 (281-293). E.S.R. 75 (300).
- 631.83 : 545—Allen, H. R. ; Gault, L. Use of silica dishes in official method for determination of potash in fertilizers. *J. Assoc. Off. Agric. Chem.* 20, 1937 (101-104). C.A. 31 (2339).
- 631.83 : 545—Lepper, W. Potash determination in mixed fertilizers. *Ztschr. Anal. Chem.* 188, 1937 (1-7). [G.]
- 631.83 : 545—Thornton, S. F. ; Kraybill, H. R. Further studies on the determination of available potash in fertilizers. *J. Assoc. Off. Agric. Chem.* 22, 1937 (287-292).
- 631.83 : 546.15—Schreibler, W. The iodine content of German potash fertilizer salts. *Landw. VersSta.* 127, 1936 (57-66). [G.]
- 631.83 : 546.331.31—Molchanov, S. P. ; Dmitrieva, N. A. The effect of sodium chloride on crop yields in relation to potash fertilizer standards. *Khim. Sotsial. Zoolod.* No. 11, 1936 (5-20). [R.]
- 631.83 : 546.72—Shibuya, K. ; Torii, T. Unfavourable effects of iron salts on the availability of the potash fertilizers. *J. Sci. Soil Japan* 9, 1935 (1-14). [J.]
- 631.83 : 546.72—Shibuya, K. ; Torii, T. Unfavourable effects of the iron salts on the availability of the potash fertilizers. II. *J. Japan Assoc. Advanc. Sci.* 10, 1935 (980-985). [J.]
- 631.83 : 546.72—Shibuya, K. ; Torii, T. Unfavourable effects of iron salts on the availability of potash fertilizers. III. *J. Sci. Soil Japan* 11, 1937 (260-278). [J.]
- 631.83 : 577.16—Scheunert, A. ; Schieblich, M. Investigations on the A, B<sub>1</sub> and B<sub>2</sub> content of hay samples from potash manurial experiments. *Bod. Zbl.* 8B, 1936 (125-131). [G.]
- 631.83 : 581.144.2—Mielecki, L. Influence of crude potash salts on the root development of plants. *Doklady. Roln.* 9, 1935 (19-55). [P.]
- 631.83 : 581.144.2—Rohde, G. The importance of potash for the root development of the plant. *Ernähr. Pflanze* 33, 1937 (65-73). C.A. 31 (2728). [G.]
- 631.83 : 581.192—Janssen, G. ; Bartholomew, R. P. The effect of potassium on the production of proteins, sugars, and starch in cowpea and in sugar beet plants and the relation of potassium to plant growth. *J. Amer. Soc. Agron.* 24, 1932 (667-680). E.S.R. 72 (165).

## FERTILIZERS AND GENERAL AGRONOMY

- 631.83 : 581.192**—Jacob, A. The influence of potash fertilizing on the chemical composition of crops. *Ztschr. Pflanz. Düng.* 37, 1935 (1-26). [G.]
- 631.83 : 581.192**—Koenig, F. The influence of potassium salt fertilizers on the value and effect of home-grown fodder. The results of feeding trials during the years 1931-1934. *Landw. Jahrb.* 81, 1935 (829-889).
- 631.83 : 581.192**—Haendschke, A. Effect of potassium fertilizers on plant yield and on the uptake of Ca, Mg, K and Na on acid and alkali soils. *Rocz. Nauk Roln.* 37, 1936 (261-290). [Plg.]
- 631.83 : 581.192**—Rohde, G. The effect of potash on the carbon dioxide assimilation of plants. *Ztschr. Pflanz. Düng.* 44, 1936 (1-24). [G.]
- 631.83 : 581.192**—Terlikowski, F.; Byczkowski, A. The influence of potassium fertilizer products on the yield and content of cation components in plants. *Rocz. Nauk Roln.* 37, 1936 (173-188). [Plg.]
- 631.83 : 631.436**—Turner, P. E. Soil conditions determining response of sugar cane, to fertilization with potash. *Proc. Sug. Cane Invest. Ctr. Trin.* 4, 1934 (364-366). C.A. 30 (556).
- 631.83 : 581.192**—Alten, F.; Goeze, G. Experiments on the effect of potassium on the carbon dioxide uptake of leaves. *Ernähr. Pflanze* 33, 1937 (21-28). [G.e.sp.]
- 631.83 : 631.615**—Popp, M.; Contzen, J. The effect of potash manuring on marsh soils. *Landw. VersSta.* 127, 1936 (123-139). [G.]
- 631.83 : 631.811.6**—Scharrer, K.; Schropp, W. Water culture and pot experiments on the effect of different potassium salts with particular reference to magnesium. *Landw. VersSta.* 121, 1934 (175-190). [G.]
- 631.83 : 631.811.6**—Behrens, W. U. The effect of the accessory salts of potash fertilizers. *Ztschr. Pflanz. Düng.* 38, 1935 (274-282).
- 631.83 : 631.813**—Prrianishnikov, D. N. The physiological acidity of potash salts. *Trans. Int. Soc. Soil Sci. Soviet Sect. 4th Comm.* 1933 (156-165). [G.]
- 631.83 : 631.84**—Kirsanov, A. T. Effect of potash with different concentrations of hydrogen and calcium ions and different amounts of nitrogen. *Trans. Int. Soc. Soil Sci. Soviet Sect. 4th Comm.* 1933 (166-181). [G.]
- 631.83 : 631.84**—Kirsanov, A. Effect of potash on different soils at various H, Ca- and N-concentrations. *Trudy Gedroz Inst. Ped.* 33, 1934 (54). Z.P.D. 42 (105). [R.]
- 631.83 : 631.84**—Mikulowski-Pomorski, J.; Porowski, St. *et al.* The effect of saltpetre and sulphate of ammonia with varying potash additions on a low potash soil. *Rocz. Nauk Roln.* 31, 1934 (91-122). B.C.A. 54 (966). Z.P.D. 1313 (469).
- 631.83 : 631.84**—Kirsanov, A. T. The mutual dependence of the action of potassic and nitrogenous fertilizers. *Ernähr. Pflanze* 31, 1935 (91-92). J.I.L.B. 4 (173). [G.]
- 631.83 : 631.84**—Kwinichidze, M. The effect of potassium when ammonium salts and nitrates are used as fertilizers. *Rocz. Nauk Roln.* 37, 1936 (189-222). [Plg.]
- 631.831**—Mönnig, H. Manurial value of Westphalian coal ash. *Angew. Chem.* 47, 1934 (842-845). B.C.A. 54 (165).

## BIBLIOGRAPHY OF SOIL SCIENCE

- 631.831**—**Bakhulin, M. D.** Peat ash as a fertilizer. *Khim. Sotsial. Zemled.* Nos. 11–12, 1935.
- 631.831 : 631.811.9**—**Fuchs, W.** Rare elements in German brown-coal ashes. *Indust. Engng. Chem.* 27, 1935 (1099–1100). E.S.R. 77 (454).
- 631.831 : 634.61** **Croucher, H. H.** Coconut husk ash as fertilizer. *J. Jamaica Agric. Soc.* 38, 1934 (617–619).
- 631.831 : 634.61** **Croucher, H. H.** Coconut husk ash as a fertilizer. *J. Jamaica Agric. Soc.* 40, 1936 (453–454).
- 631.831 : 634.61**—**Salgado, M. L. M.** Studies on the coconut palm. III. Coconut husk. A. The manurial value of coconut husk ash. *Trop. Agricul.* 86, 1936 (131–138).
- 631.831 : 664.15**—**Alcock, W. J.** The disposal of molasses by converting into a potassic fertilizer. *Proc. Inst. Chem. India* 7, 1935 (106–120).
- 631.835 : 631.816.2**—**Zhorikov, E. A.** The effect of different times of application of sylvite on the agrochemical properties of soils and on potato yields. *Khim. Sotsial. Zemled.* No. 4, 1935 (32–36). R.g.
- 631.839**—**Smirnov, N. D.** Nepheline as a fertilizer. *Khim. Sotsial. Zemled.* No. 6, 1935 (23–32). C.A. 30 (1168).
- 631.839**—**Smirnov, N. D.** The utilization of nepheline rocks as fertilizers. *Miner. Udob.* 5, 1935 (81–88). R.
- 631.839**—**Kirsanova, A. T. ; Kirsanova, E. E.** The effect of nepheline on soils requiring K-fertilizers. *Trudy L'OVUAA*, 45, 1936 (55–66). [R.e.]
- 631.839 : 631.415.2** **Molchanov, S. P. ; Ledenev, S. N. ; Kozlova, S. M.** Effectiveness of nepheline fertilizers on mineral podzol soils. *Khim. Sotsial. Zemled.* No. 2–3, 1936 (15–26). R.
- 631.839 : 631.415.2** **Tolchinsky, Z. G.** Khibin nepheline as a potash fertilizer and neutralizer of acid soils. *Khim. Sotsial. Zemled.* No. 2–3, 1936 (3–14). R.

## 631.84 NITROGEN FERTILIZERS

- 631.84**—**Ministry of Agriculture and Fisheries.** Nitrogenous fertilizers. *Min. Agric. Advis. Leaflet* 111, 1934, pp. 4. *Herb. Abv.* 5 (198).
- 631.84**—**Burgevin, H. ; Guyon, G.** Observations on the utilization of fertilizer nitrogen by plants. *Ann. Agron.* 6 (n.s.), 1936 (1–19). F.
- 631.84**—**Paden, W. R.** Responses from different sources of nitrogen fertilizer. *S.C. Agric. Expt. Sta. Bull.* 309, 1937, pp. 40. C.A. 31 (6800).
- 631.84**—**Serdlukov, V. A.** Application of nitrogenous fertilizers according to the results of trials in the Sverdlov region. *Khim. Sotsial. Zemled.* No. 3, 1937 (34–46). [R.e.]
- 631.84 : 545**—**Gittel, W.** The determination of nitrogen in cyanamide. *Ztschr. Anal. Chem.* 93, 1933 (331–332). *Bied. Zbl.* 65 (282). [G.]
- 631.84 : 545** **Haas, J.** Determination of ammonia-nitrogen in presence of urea in fertilizers. *Chem. Obozr.* 10, 1935 (44–48). B.C.A. 55 (210).

# FERTILIZERS AND GENERAL AGRONOMY

**631.84 : 545**—Teletov, I. S.; Farash'yan, S. P.; Tikhonenko, V. I. Determination of ammoniacal and nitrate nitrogen in mineral fertilizers by a simplified microanalysis. *Zavod. Lab.* 4, 1935 (1194-1198). C.A. 30 (2307).

**631.84 : 551.58**—Huppert. Is there any point in applying nitrogen fertilizers in wet weather? *Landb. u. Tech.* 10, No. 5, 1934. Z.P.D. 38 (175). G.

**631.84 : 631.416**—Morgan, M. F. Soil changes resulting from nitrogenous fertilization. *Conn. Agric. Expt. Sta. Bull.* 384, 1936 (371-449).

**631.84 : 631.432.2**—Kosiński, I. Influence of soil moisture on the fertilizer value of nitrogen compounds. *Gaz. Cukrown.* 76, 1935 (183-197). C.A. 29 (3444).

**631.84 : 631.67**—Babcock, W. G. Suitability of nitrogenous fertilizers for application in irrigation water. *Calif. Citrog.* 22, 1936 (70-75). C.A. 31 (3615).

**631.84 : 631.813**—Blair, A. W. Interpreting fertilizer analyses with reference to the sources of nitrogen. *N. J. Agric. Expt. Sta. Circ.* 331, 1934, pp. 4. E.S.R. 72 (304).

**631.84 : 631.813**—Parker, F. W. The relation between the equivalent acidity of sources of nitrogen and their efficiency in potato fertilization. *Amer. Potato J.* 12, 1935 (60-62). C.A. 29 (3446).

**631.84 : 631.813**—Vries, O. de; Visser, W. C. The changes in the soil by prolonged yearly application of some nitrogen containing fertilizers. *Versl. Rijkslandb. Proefsta. Groningen* 40A, 1934 (505-541). Dae.

**631.84 : 631.815**—Lemoigne; Dupic. Experiments on wheat after beetroots. *Bull. Rens. Serv. Agric. Nov.-Dec.* 1936 (3,563-3,564). F.

**631.841**—Wierszyłowski, J. Possibility of nitrogen losses from ammonium fertilizers. *Wydańictwa Szkoły Głównej Gospodarstwa Wiejskiego* 1, 1934 (1-15). C.A. 30 (7271).

**631.841**—Borden, R. J. Sources of nitrogen: anhydrous ammonia versus ammonium sulphate versus ammonium nitrate. *Hawai. Plant. Rec.* 39, 1935 (198-199). C.A. 29 (7555). B.C.A. 56 (168).

**631.841 : 541.132**—Turchin, F. V. The effect of cations and anions in fertilizers on the availability of ammonia nitrogen. *Trans. Int. Soc. Soil Sci. Soviet Sect. 4th Comm.* 1933 (235-256).

**631.841 : 581.192**—Prince, A. L.; Blair, A. W. A study of the effect of certain ammonium compounds on the soil and on the crop. *N. J. Agric. Expt. Sta. Bull.* 571, 1934, pp. 20. E.S.R. 72 (21).

**631.841 : 631.453**—Lewis, A. H. The effect of ammonium-calcium balance on plant nutrition. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (195-196).

**631.841.1**—Kilbinger, A. Economical application of ammoniacal fertilizers. *Landb. u. Tech.* 1937 (5). G.]

**631.841.1 : 631.815**—Aragon, V. B.; Esguerra, J. P. A report on the immediate and residual effects of ammonium sulphate fertilizer. *Amer. Potato J.* 24, 1935 (219-228).

**631.841.1 : 631.815**—Aragon, V. B.; Esguerra, J. P. A report on the immediate and residual effects of ammonium sulphate fertilizer. *Philipp. Agricult.* 24, 1935 (219-228).

# BIBLIOGRAPHY OF SOIL SCIENCE

**631.841.1 : 631.815**—Keiller, P. A. Losses of sulphate of ammonia during rain. *Trop. Agricult.* 59, 1937 (127-134).

**631.841.5**—Doerell, E. G. Experiment with granulated cyanamide. *Deut. Landw. Pr.* 62, 1935 (42). Z.P.D. 41 (381). [G.]

**631.841.5**—Sherard, H. A comparison of calcium cyanamide with other standard sources of nitrogen on corn and cotton on Coastal Plain soils. *Comm. Fert.* 50, No. 3, 1935 (9-11, 32). C.A. 29 (4873).

**631.841.5 : 631.411.1**—Giesecke, F.; Schmalfuss, K. The effect of cyanamide in comparison with other nitrogenous fertilizers on crop yield and the decomposition of nitrogen in light soils. *Bodenk. Pflernähr.* 1, 1936 (348-355). [G.]

**631.841.5 : 631.411.1**—Rathsack, K. The effect of calcium cyanamide in comparison with other nitrogenous fertilizers on crop yield, and the decomposition of nitrogen in light soils. *Bodenk. Pflernähr.* 2, 1937 (327-336). [G.]

**631.841.5 : 631.414.3**—Fink, D. S. Soil factors which prevent toxicity of calcium cyanamide. *J. Amer. Soc. Agron.* 26, 1934 (929-939).

**631.841.5 : 631.414.3**—Wiadowski, A. Investigations on the adsorption of cyanamide in different kinds of soil. *Suppl. Rozn. Nauk Roln.* 34, 1935 (1-30). *Biol. Zbi.* 6 (567). [14.]

**631.841.5 : 631.46**—Schmalfuss, K. The effect of cyanamide and other nitrogen fertilizers on the biological activity of the soil. *Bodenk. Pflernähr.* 2, 1936 (110-120). [G.]

**631.841.5 : 631.462**—Dix, W. Pot experiments with calcium cyanamide. *Ztschr. Pflanz. Dung.* 38, 1935 (333-340). [G.]

**631.841.5 : 631.547.2**—Richardson, H. L. Field experiments on the action of calcium cyanamide on germinating seeds and on charlock in barley. *Emp. J. Expt. Agric.* 3, 1935 (41-49).

**631.841.5 : 631.812**—Vorob'ev, F. K. The conversion of calcium cyanamide in soils and in storage and its effects upon the growth of flax. *Trudy Gidrol. Inst. Vses. Leningr. Lab.* No. 3, 1934 (130-165). C.A. 29 (2279). [R.]

**631.841.5 : 631.812**—Ratner, E. J. The changes observed during the storage of calcium cyanamide and their importance for its effectiveness as a fertilizer. *Ztschr. Pflanz. Dung.* 38, 1935 (257-274). [G.]

**631.841.5 : 631.812**—McCool, M. M. Fertilizer value of a new nitrogenous material. *Boyce Thompson Inst. Contr.* 8, 1936 (13-24).

**631.841.5 : 631.841.1**—Crowther, E. M. Comparative trials of calcium cyanamide and other nitrogenous fertilizers on arable crops. *Emp. J. Expt. Agric.* 3, 1935 (129-143).

**631.841.5 : 631.841.1**—Richardson, H. L.; Crowther, E. M. Studies on calcium cyanamide. V. The utilization of calcium cyanamide in pot culture experiments. *J. Agric. Sci.* 25, 1935 (132-150).

**631.841.5 : 631.841.7**—Rotini, O. T. The catalytic transformation of cyanamide into urea. *Chim. Indust.* 17, 1935 (14-20). C.A. 29 (5213). [E.]

**631.841.5 : 631.841.7**—Teshima, S. Influence of urea and cyanamide derivatives on plant growth. *J. Agric. Chem. Soc. Japan* 11, 1935 (1055-1074). B.C.A. 55 (341).

# FERTILIZERS AND GENERAL AGRONOMY

- 631.841.5 : 631.842.3—Marsh, R. S.** Soil nitrate nitrogen determinations following the applications of calcium cyanamide and nitrate of soda to the surface of the soil under apple trees during dry and normal seasons. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (142-144).
- 631.841.5 : 631.855—Ødelien, M.** Experiments in mixing calcium cyanamide with superphosphate. *Meld. Norges Landbr-Høisk.* 16, 1937, pp. 25. [N.e.]
- 631.841.5 : 631.855—Ødelien, M.** Experiments with mixing calcium cyanamide with superphosphate. *Meld. Norges Landbr-Høisk.* 17, 1937 (207-231). [N.e.]
- 631.841.5 : 632—Haensler, C. M. ; Moyer, T. R.** Effect of calcium cyanamide on the soil microflora with special reference to certain plant parasites. *Soil Sci.* 43, 1937 (133-149).
- 631.841.6—Schmitt, L.** The dicyanodiamide effect in cyanamide. *Landw. Jahrb.* 80, 1934 (669-677). [G.]
- 631.841.6—Smock, R. M.** Some physiological studies with calcium cyanamide and certain of its decomposition products. *Ohio Agric. Expt. Sta. Bull.* 555, 1935, pp. 46. C.A. 30 (1924).
- 631.841.6—Teshima, S.** On the decomposition of lime-nitrogen and some of the derivatives of cyanamide in soils. *J. Sci. Soil Japan*, 9, 1935 (269-280). [J.]
- 631.841.7—Turchin, F. V.** Agro-chemical studies of urea. *Miner. Udob.* 2, 1935 (63-73). [R.]
- 631.841.7—Vande Velde, A. J. J.** Soils containing urea. *Natuurwet. Tijdschr.* 17, 1935 (57-63). B.C.A. 54 (602).
- 631.841.7—Lewis, A. H.** The fertilizer value of some concentrated materials, particularly urea and guanidine and their nitrates and phosphates. *J. Agric. Sci.* 26, 1936 (509-526).
- 631.841.7—Parker, F. W.** Crystal urea as a fertilizer. *Amer. Fert.* 84, 25 Jan., 1936 (7, 26).
- 631.841.7—Brown, B. E. ; Reid, F. R.** Formamide and ammonium formate as nitrogen sources for plants. *Soil Sci.* 43, 1937 (341-346).
- 631.841.7—Rehling, C. J. ; Taylor, J. R.** Formamide as a nitrogenous fertilizer. *J. Amer. Soc. Agron.* 29, 1937 (134-144).
- 631.841.7—Scholl, W. ; Davis, R. O. E. et al.** Melamine of possible plant-food value. *Indust. Engng. Chem.* 29, 1937 (202-205). C.A. 31 (1936).
- 631.841.7—Sinclair, K. J.** The manurial value of synthetic urea. *Emp. J. Expt. Agric.* 5, 1937 (162-168).
- 631.841.7 : 631.461.1—Tandon, S. P.** The effect of temperature on the bacterial ammonification of urea. *Proc. Acad. Sci. U.P. India* 4, 1934 (169-172). C.A. 30 (558).
- 631.841.8—Waynick, D. D.** Anhydrous ammonia as a fertilizer. *Calif. Citrog.* 19, 1934 (310-311). B.C.A. 54 (422). C.A. 28 (7400).
- 631.841.8—Rooseboom, A.** Use of pure ammonia in irrigated agriculture. *Cong. Int. Tech. Chim. Indust. Agric. 5th Cong. Holland* 1, 1937 (246-248). B.C.A. 56 (954).
- 631.841.8 : 631.671—Waynick, D.** Use of anhydrous ammonia in irrigation water. *Calif. Sug. Beet Conf. Sacramento* 1934. F.A.S. 30 (70).
- 631.842—Mitscherlich, E. A. ; Beutelspacher, H.** The estimation of organic nitrogen by the Kjeldahl method in presence

## BIBLIOGRAPHY OF SOIL SCIENCE

of nitrates. *Bodenk. Pflernähr.* 3, 1937 (195-201). C.A. 31 (7579). [G.]

**631.842 : 631.416.1**—Nemec, A. Increased yield due to Ostrau saltpetre in relation to the nitrogen content of the soil. *Sborn. Čsl. Akad. Zeměd.* 10, 1935 (160-164). [Cz.g.]

**631.842 : 631.453**—Gain, E. Toxic effect of nitrates upon seed. *C.R. Acad. Agric.* 22, 1936 (78-80). *Herb. Abs.* 6 (147). [F.]

**631.842.3**—Merz, A. R.; Fletcher, C. G. Production and agricultural use of sodium nitrate. *U.S.D.A. Circ.* 436, 1937, pp. 11.

**631.842.3 : 631.811.9** Breckpot, R. Spectrographic determination of certain secondary elements in Chilean sodium nitrate. *Cong. Int. Tech. Chim. Indust. Agric. 4th Cong. Brussels; Inst. Belge Amélior. Better. Pub.* 6, 1935 (403-404). [F.]

**631.842.3 : 631.811.9** Garola, J.; Brioux. Comparison of Chilean and synthetic sodium nitrate. *Rech. Fert. Sta. Agron. Douai, 1934, 1935* (48-49). C.A. 29 (7002).

**631.842.3 : 631.811.9** Shive, J. W. The adequacy of the boron and manganese content of natural nitrate of soda to support plant growth in sand cultures. *N.J. Agric. Expt. Sta. Bull.* 603, 1936, pp. 36.

**631.842.4**—Baranov, P. A. The physical properties of ammonium nitrate treated with calcium carbonate. *Zh. Khim. Prom.* No. 10, 1934 (59-62). C.A. 29 (1198). [R.]

**631.842.4**—Clausen. Can Kalkammonsaltpeter also act unfavourably? *Deut. Landw. Pr.* 1935 (330). *Bied. Zbl.* 65 (401). [G.]

**631.842.4**—Turchin, F. V. The agricultural chemical characteristic of potash ammonium nitrate. *Miner. Udob.* 4, 1935 (68-72). C.A. 30 (1494). [R.]

**631.842.4**—Torsuev, N. S. The explosiveness of fertilizers containing ammonium nitrate. *Zh. Khim. Prom.* 13, 1936 (102-104). C.A. 30 (3150). [R.]

**631.842.4 : 551.58**—Keese. The action of nitrogen in the dry season 1934. *Landw. u. Tech.* 11, No. 3, 1935 (4-5).

**631.847.2**—Mahdok, M. R. Use of soil as a medium for distributing legume organism culture to cultivators. *Agric. Linc-Stk. India* 4, 1934 (670-682).

**631.847.2**—Perotti, R. Physiological activation or inoculation of cultivated soils. *Mem. Lab. Pat. Batt. Ist. Agrar. Pisa* 3, No. 75, 1933, pp. 6. *Zbl. Bakt.* 91 (498).

**631.847.2**—Lemmermann, O. Some green manuring problems. *Ztschr. Pflanz. Düng.* 37, 1935 (205-222). [G.]

**631.847.2**—McDonald, J. The inoculation of leguminous crops. *E. Afric. Agric. J.* 1, 1935 (8-12).

## 631.85 PHOSPHATE FERTILIZERS

**631.85**—Sanfourche, A. *et al.* Researches on phosphoric acid and phosphates. I—XVI. *Bull. Soc. Chim. Fr.* 53-54, 1933 (951-963). [F.]

**631.85**—Luckmann, H. Advances in the field of silicic acid-phosphoric acid fertilizers. *Kunstdünger* 31, 1934 (287-290). C.A. 29 (1201). [G.]

**631.85**—Mahmoud, A. Phosphatic fertilizers. Comparative trials on immediate and residual effects. *Roy. Agric. Soc. Cairo, Chem. Sect. Bull.* 21, 1934, pp. 29. *Herb. Abs.* 6 (57).

# FERTILIZERS AND GENERAL AGRONOMY

- 631.85—Irish Free State.** Field experiments 1933. *J. Dept. Agric. I.F.S.* 33, 1935 (33-47).
- 631.85—Noll, C. F.; Irvin, C. J.; Gardner, F. D.** Field experiments with phosphates. *Pa. Agric. Expt. Sta. Bull.* 315, 1935, pp. 14.
- 631.85—Paauw, F. van der.** Compilation of the results of fertilizer experiments with different forms of phosphate on Dutch experimental fields. *Versl. RijkslandbProefsta. Groningen*, 41A, 1935 (265-302). [D.G.]
- 631.85—Scheffer, F.; Nagel, W.** Phosphoric acid as fertilizer. *Phosphorsäure* 5, 1935 (312-324). C.A. 31 (6801). [G.]
- 631.85—Wilhelmj, A.; Gericke, S.** Investigations on the fertilizer effect of different phosphoric acid-containing fertilizers. *Phosphorsäure* 5, 1935 (198-214). [G.]
- 631.85—Green, J. R.** A review of the experimental work with phosphate in Montana, 1928 to 1935. The effect of phosphate on plants. *Mont. Agric. Expt. Sta. Circ.* 148, 1936 (1-11). E.S.R. 75 (453).
- 631.85—Mitscherlich, E. A.** The action of phosphoric acid on vegetation in pots. *Cong. Chim. Indust. 15th Cong. Brussels*, 1935, 1936 (427-437). C.A. 30 (5709).
- 631.85—Krügel, C.; Dreyspring, C.; Heinrich, F.** Experiments carried out by the Hamburg Agricultural Experimental Station. *Superphosphate* 10, 1937 (141-148). E.F.G.
- 631.85—Krügel, C.; Dreyspring, C.; Heinrich, F.** Is meta-phosphate a plant food? (Conclusion.) *Superphosphate* 10, 1937 (161-165). E.F.G.
- 631.85:545—Bijlacher, G. S.; Cheplelevsky, M. L.** Influence of pH of citrate solutions on determination of assimilable phosphoric acid in fertilizers. *Zavod. Lab.* 3, 1934 (593-597). B.C.A. 53 (1025).
- 631.85:545—Terlet, H.** Analysis of phosphatic fertilizers. *Ann. Falsif.* 22, 1934 (541-547). B.C.A. 54 (198).
- 631.85:545—Kaufman, A. P.** Rapid method for determining assimilable phosphoric acid in (phosphatic) precipitates. *Zavod. Lab.* 4, 1935 (705). C.A. 29 (8200).
- 631.85:545—Martens, P.** Official methods for determining the phosphoric acid content of fertilizers. *Cong. Int. Tech. Chim. Indust. Agric. 4th Cong. Brussels; Inst. Belge Amélior. Better. Pub.* 6 1935 (402). [F.]
- 631.85:545—Jensen, A. T.** Fluorine and ammonia as a source of error in the determination of phosphoric acid by the apatite method. *Kgl. Veter.-og. Landbohøjsk. Aarskr.* 1935 (41-50). [E.]
- 631.85:545—Lepper, W.** The determination of phosphoric acid in lime-containing Nitrophoska. *Landw. VersSta.* 123, 1935 (344-348). [G.]
- 631.85:545—Rosanov, S. N.; Mankova, G. A.; Fedotova, E. A.** Iron determination in phosphorites and apatites by the colorimetric method with sulphosalicylic acid. *Ztschr. Pflanz. Düng.* 41, 1935 (59-74). [G.]
- 631.85:545—Terlet, H.; Briau, A.** Examination of various methods for the estimation of phosphoric acid by precipitation as ammonium phospho-molybdate. Their application to the analysis of fertilizers. *Ann. Falsif.* 28, 1935 (546-555). [F.]



## BIBLIOGRAPHY OF SOIL SCIENCE

- 631.85 : 545**—D'Ans, J. ; Schuppe, W. The citrate solubility of phosphate. *Bodenk. Pflernähr.* 1, 1936 (356-370). [G.]
- 631.85 : 545**—Hampl, J. Citric acid soluble  $P_2O_5$  in citrophosphate and its determination. *Shorn. Čsl. Akad. Zeměd.* 11, 1936 (285-290). [Cz.g.]
- 631.85 : 545**—Kaminski, F. The determination of calcium in basic slag. *Landw. VersSta.* 124, 1936 (323-328). [G.]
- 631.85 : 545**—Usharsky, B. A. Determination of  $P_2O_5$  in phosphoric acid fertilizers with more rapid acidimetric, colorimetric and argentometric methods. *Shorn. Rab. VNIIS*, 1936 (372-377). R.
- 631.85 : 545**—Scheel, K. C. The colorimetric determination of phosphoric acid in fertilizers with the Pulfrich-photometer. *Ztschr. Anal. Chem.* 105, 1936 (256-269). [G.]
- 631.85 : 545**—Popp, M. ; Westerhoff, H. Colorimetric phosphate-determination in fertilizers. *Bodenk. Pflernähr.* 4, 1937 (19-29). [G.]
- 631.85 : 546.16**—Brioux, C. ; Jouis, E. Effect of calcium fluoride in precipitated mineral phosphates. *Rapp. Inst. Rech. Agron. Paris*, 1932, 1933 (172). Z.P.D. 37 (366). F.
- 631.85 : 546.16**—Hart, E. B. ; Phillips, P. H. ; Bohstedt, G. Relation of soil fertilization with superphosphates and rock phosphate to fluorine content of plants and drainage waters. *Amer. J. Pub. Health* 24, 1934 (936-940). B. A. 53 (1026).
- 631.85 : 546.16**—Bartholomew, R. P. Fluorine, its effect on plant growth and its relation to the availability to plants of phosphorus in phosphate rocks. *Soil Sci.* 40, 1935 (203-217).
- 631.85 : 546.16**—Morse, H. H. The toxic influence of fluorine in phosphatic fertilizers on the germination of corn. *Soil Sci.* 39, 1935 (177-193).
- 631.85 : 546.16**—Bartholomew, R. P. Availability of phosphate rocks in soils of varying degrees of acidity. *J. Amer. Soc. Agron.* 29, 1937 (293-298).
- 631.85 : 546.23**—Rader, L. F. ; Hill, W. L. Occurrence of selenium in natural phosphates, superphosphates and phosphoric acid. *J. Agric. Res.* 51, 1935 (1071-1083).
- 631.85 : 546.284**—Blanck, E. ; Schorstein, H. ; Themnitz, R. The effect of calcium silicate and carbonate on the utilization of different phosphatic fertilizers. *J. Landw.* 84, 1936 (297-319). [G.]
- 631.85 : 581.144.2**—Goedewaagen, M. A. J. The relative weight of shoot and root of different crops and its agricultural significance in relation to the amount of phosphate added to the soil. *Soil Sci.* 44, 1937 (185-202).
- 631.85 : 631.413.2**—Riub, P. Ya. The reaction of solonchaks like and podzol soils with apatite,  $Ca_3(PO_4)_2$  and  $CaH_2PO_4$ . *Khim. Sel'sk. Zemled.* 6, 1933 (28-42). *Bied Zh.* 6 (268). R.
- 631.85 : 631.413.2**—Davis, L. E. Sorption of phosphates by non-calcareous Hawaiian soils. *Soil Sci.* 40, 1935 (129-158).
- 631.85 : 631.413.2**—Thomas, W. The distribution and condition of phosphorus in three horizons of a differentially fertilized Hagerstown clay loam soil planted to apple trees in metal cylinders. *J. Agric. Res.* 51, 1935 (321-329).
- 631.85 : 631.413.2**—Vries, O. de ; Hetterschij, C. W. G. The phosphoric acid economy of heath sandy soils. *Rijkslandb. Proefsta. Groningen* 1936, pp. 63.

## FERTILIZERS AND GENERAL AGRONOMY

- 631.85 : 631.416**—Kirsanov, A. T. The effect of  $P_2O_5$  on plants in soils with different concentrations of H, Ca, N and Fe. *Bodenk. PflErnähr.* 5, 1937 (25-37). G.
- 631.85 : 631.432.3**—Brown, L. A. A study of phosphorus penetration and availability in soils. *Soil Sci.* 39, 1935 (277-287).
- 631.85 : 631.432.3**—Kriuchkova, A. P.; Popova, F. V. Biological methods for registering the movement of the phosphate ion in soils. *Mikrobiologia* 4, 1935 (593-602). [R.e.]
- 631.85 : 631.432.3**—Sekera, F. The penetration of superphosphate and basic slag. *Phosphorsäure* 5, 1935 (665-694). G.]
- 631.85 : 631.432.3**—Kriuchkova, A. P. Microbiological diagnosis in the elaboration of methods for applying fertilizers to beet. *Mikrobiologia* 5, 1936 (167-193). [R.e.]
- 631.85 : 631.432.3**—Vries, O. de; Hettterschij, C. W. G. The mobility of phosphoric acid in soil. *Bodenk. PflErnähr.* 2, 1937 (178-186). G.]
- 631.85 : 631.461.3**—Fraps, G. S.; Sterges, A. J. Basicity of some phosphates as related to nitrification. *J. Amer. Soc. Agron.* 29, 1937 (613-621).
- 631.85 : 631.811.2**—Turchin, T. V. Plant absorption of citrate-soluble phosphates. *Phosphorsäure* 4, 1934 (500-507). C.A. 29 (272). G.]
- 631.85 : 631.811.2**—Doerell, E. G. Phosphate fertilizing by recipe or based on soil tests. *Phosphorsäure* 5, 1935 (246-254). G.]
- 631.85 : 631.812**—Blanck, E.; Heukeshoven, W. The phosphate decomposing power of potassium oxalate. *J. Landw.* 82, 1934 (177-183). G.]
- 631.85 : 631.812**—Köttgen, P. Conversion experiments with phosphatic fertilizers. *Phosphorsäure* 5, 1935 (551-557). G.]
- 631.85 : 631.812**—MacIntire, W. H.; Hardin, L. J.; Oldham, F. D. Calcium silicate slags. Properties of quenched and unquenched slags and effects of their admixtures with phosphatic fertilizers. *Indust. Engng. Chem.* 28, 1936 (48-57). C.A. 30 (1498).
- 631.85 : 631.815**—Adler, E. The residual effect of certain phosphatic fertilizers. *Farm. S. Africa* 10, 1935 (404, 412).
- 631.85 : 631.816.3**—Emslie, B. L. The fate of phosphate in the soil. *Sci. Agr.* 16, 1936 (261-263).
- 631.85 : 631.821.1**—Golubev, B. A. The use of lime and phosphate. *Trans. Int. Soc. Soil Sci. Societ. Sect. 4th Comm.* 1933 (230-231).
- 631.85 : 631.821.1**—Behrens, W. U. The uptake by plants of phosphoric acid in combination with calcium. *Ztschr. Pflanz. Düng.* 39, 1935 (301-309). G.]
- 631.85 : 631.821.1**—Clarens, J.; Margulis, H. Study of mutual reactions of phosphates and soils. III. Monocalcium phosphate and calcium carbonate alone or in the presence of variable quantities of lime. *Bull. Soc. Chim. Fr.* 3, 1936 (1053-1060). C.A. 30 (6492). [F.]
- 631.85 : 631.821.1**—Sauerlandt, W. Investigations on nitrate formation and the decomposition of phosphoric acid under the influence of liming and the lime content of soils. *Ztschr. Pflanz. Düng.* 45, 1936 (129-153). G.]

# BIBLIOGRAPHY OF SOIL SCIENCE

**631.851—Kirsanov, A. ; Kirsanova, E.** The effect of apatite in cropping tests. *Khim. Sotsial. Zemled.* 6, 1933 (49-59). *Rud. Zbl.* 6 (263). [R.]

**631.851—Shcherba, S. A.** The results of prolonged field experiments with ground phosphate at the Institute for Fertilizer Research. *Trans. Int. Soc. Soil Sci. Soviet Sect. 4th Comm.* 1933 (241-243).

**631.851—Vivarelli, L.** Fertilizing action of phosphorites and S minerals. *Ital. Agric.* 70, 1933 (139-147). [L.]

**631.851—Vyshchikov, L.** Apatite as a fertilizer. *Khim. Sotsial. Zemled.* 4, 1933 (60-62). *Rud. Zbl.* 6 (262). [R.]

**631.851—Askani, D. L. ; Cheifex, D. M.** Iron and aluminium phosphate as sources of  $P_2O_5$  for plants. *Phosphorsäure* 4, 1934 (705-741). [G.]

**631.851—Brown, B. E. ; Reid, F. R. ; Jacob, K. D.** Fertilizer value of phosphate rock improved by treatment with water vapour at high temperatures. *Amer. Fert.* 81, 1934 (57, 27). C.A. 29 (1568).

**631.851—Rozanov, S. N.** Citric acid-soluble phosphate in phosphorites. *Phosphorsäure* 4, 1934 (641-666). C.A. 29 (1200). [G.]

**631.851—Akhromeiko, A. I.** The availability of  $P_2O_5$  to plants in Fe and Al phosphates. *Trudy Nauch. Inst. Udob.* 126, 1935 (121-128). [R.g.]

**631.851—Balashev, L. L.** Phosphorite and field cultures. *Miner. Udob.* 2, 1935 (78-91). [R.]

**631.851—Smirnov, N. D.** Vivianite as a phosphatic fertilizer. *Trudy Nauch. Inst. Udob.* 1, No. 3, 1935 (84-88). B.C.A. 56 (166).

**631.851—Smith, R. L.** Phosphate rock as filler substitute in fertilizer mixtures. *Comm. Fert.* 51, No. 5, 1935 (14, 16, 18, 20, 22-24). C.A. 30 (1926).

**631.851—White, J. T. ; Hardon, H. J.** Pot experiments with natural aluminium phosphate. *Korte Meded. Alg.-Proefsta. Landb.* 16, 1935, pp. 34. [Duc.]

**631.851—White, J. T. ; Hardon, H. J.** Pot experiments with natural aluminium phosphate. *Landbouw* 11, 1935 (33-36). *Hort. Abt.* 6 (59). [Duc.]

**631.851 : 539.215—Gonggrijp, H.** Orientation phosphate pot tests with maize. *Meded. Alg. Proefsta. Agros. Alg. Ser.* No. 56, 1933, pp. 15. C.A. 29 (7556).

**631.851 : 539.215—Fraps, G. S.** Availability of the phosphoric acid of finely-divided rock phosphate. *Tex. Agric. Expt. Sta. Bull.* 509, 1935 (5-16). C.A. 29 (6346).

**631.851 : 539.215—Smirnov, N. D.** Fineness of grinding of phosphorites. *Khim. Sotsial. Zemled.* No. 3, 1935 (45-52). [R.]

**631.851 : 581.144.2—Stoklasa, J.** Decomposition of rock phosphate by root excretions of individual cultivated plants. *Phosphorsäure* 4, 1934 (129-148). [G.]

**631.851 : 631.445.4—Pogorelov, P. N.** The application of phosphate rock to chernozems. *Khim. Sotsial. Zemled.* No. 2-3, 1936 (69-76). [R.]

**631.851 : 631.46—Heck, A. F.** The biological effect of available phosphorus in Hawaiian soils. *J. Amer. Soc. Agron.* 27, 1935 (847-851).

# FERTILIZERS AND GENERAL AGRONOMY

**631.851 : 631.84—Sokolov, A. V.** The influence of  $(\text{NH}_4)_2\text{SO}_4$  and  $\text{NaNO}_3$  on the effect of raw phosphates. *Trudy Nauch. Inst. Udob.* 126, 1935 (134-143). [R.g.]

**631.852 : 631.815—Cuba, P.** On the duration of the effect of ground bones as a phosphatic fertilizer. *Inst. Agron. São Paulo, Bol.* 7, 1936, pp. 8. [Pt.]

**631.853—Krügel, C.; Dreyspring, C.; Heinz, W.** The water solubility of basic slag. *Superphosphate* 10, 1934 (97-103). C.A. 29 (1200). [G.]

**631.853—Kappen, H.; Solberg, P.** Further experiments with blast furnace slag. *Ztschr. Pflanz. Düng.* 38, 1935 (355-361). [G.]

**631.853—Köttgen, P.** Exchange reactions of basic slag with soil and permutite. *Phosphorsäure* 5, 1935 (89-94). [G.]

**631.853—Schmitt, L.** The utility of blast furnace slag as a liming material. *Landw. Jahrb.* 82, 1935 (253-274). [G.]

**631.853—Hampl, J.; Sedlacek, B.** The reason for the low citric acid-solubility of basic slag. *Storn. Čsl. Akad. Zemd.* 11, 1936 (576-579). [Cz.g.]

**631.853 : 546.72—Wilhelmj, A.; Gericke, S.** The effect of iron in basic slag. *Phosphorsäure* 5, 1935 (95-102). [G.]

**631.853 : 631.811.9—Wilhelmj, A.** Mysterious fertilizer effects. *Phosphorsäure* 5, 1935 (1-37). [G.]

**631.853 : 631.851—Crowther, E. M.** Basic slags and mineral phosphates. *J. Roy. Agric. Soc.* 95, 1935, pp. 20.

**631.854—Beck, J.** Natural guano. *Ann. Falsif.* 28, 1935 (133-146). B.C.A. 54 (567). [F.]

**631.854—Cancino, J. M.** Peruvian guano. *Bol. Soc. Quím. Peru.* 2, 1936 (9-18). B.C.A. 55 (898).

**631.854 : 546.22—Armero, L. de; Mariselli, J. A.** A basis for the study of the solubilization of phosphates in low-grade guano with sulphur. *Peru Esta. Expt. Agric. La Molina Inf.* 36, 1936, pp. 28. [Sp.]

**631.854 : 631.812—Lessware, B.** Fish guano; its manufacture, use and value. *Fert. Fed. J.* 19, 1933 (681-682). C.A. 29 (1201).

**631.854 : 631.812—Copeman, P. R. v. d. R.; Dillman, F. J.** Changes in the composition of guano during storage. *J. Agric. Sci.* 27, 1937 (178-187).

**631.855—British Sugar Beet Review.** Granular superphosphate. *Brit. Sug. Beet Rev.* 8, 1934 (16). Z.P.D. 41 (104).

**631.855—Truninger, E.** Under what conditions is the use of superphosphate indicated? *Landw. Jahrb. Schweiz* No. 7, 1934 (862-868). [G.]

**631.855—Belsky, V. P.** Field experiments with ammonized superphosphates. *Trudy Nauch. Inst. Udob.* 126, 1935 (85-97). [R.g.]

**631.855—Krügel, C.; Dreyspring, C.** Experiments carried out by the Hamburg Agricultural Experimental Station. 43. Further vegetation experiments with Kotka-phosphate. *Superphosphate* 8, 1935 (201-206, 221-226).

**631.855—Mayer, A.** The new Dutch super-fertilizer. *Deut. Landw. Pr.* 62, 1935 (147). Z.P.D. 41 (382). [G.]

**631.855—Salter, R. M.** The direct use of superphosphate. *Amer. Fert.* 83, No. 3, 1935 (7, 22). J.H.B. 4 (336)

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.855—Shapiro, G.** Pot experiment with ammonized superphosphates on a deep chernozem. *Trudy Nauch. Inst. Udob.* 126, 1935 (82-85). [R.g.]
- 631.855—Turcchin, F. V.** Ammonisation of superphosphates and its effect on  $P_2O_5$  availability. *Trudy Nauch. Inst. Udob.* 126, 1935 (66-71). [R.g.]
- 631.855:631.812—Berlin, L.; Goritzkaya, L.; Zasedateleva, A.** Treating ordinary and acid superphosphates with ammoniacal solutions of ammonium nitrate. *Miner. Udob.* 4, 1935 (21-37). C.A. 30 (1496).
- 631.855:631.812—Tseslins'ka, E. P.** The effect of the addition of ash on the water-soluble  $P_2O_5$  of superphosphate. *Trudy Inst. Agrogront. Khim.* 2, 1936 (49-58). [U.r.e.]
- 631.855:631.821.1—Krügel, C.; Dreyspring, C.; Heinrich, F.** Experiments carried out by the Hamburg Agricultural Experimental Station. 48. Interaction of phosphoric acid and lime. *Superphosphate* 10, 1937 (181-186). [E.F.G.]
- 631.855:631.824—Druzhinin, D. V.** The application of dunita for the improvement of the properties of superphosphate. *Ztsch. Pflanz. Düng.* 45, 1936 (303-305). [G.]
- 631.855:631.824—Druzhinin, D. V.; Buterlin, A. A.; Polovinkina, V. N.** Superphosphates improved by the addition of dunita. *Trudy Nauch. Inst. Udob.* No. 129, 1936 (38-56). [R.g.]
- 631.855:631.841.5—Gerlach, M.** The yield-increasing effect of a mixture of superphosphate and calcium cyanamide. *Ztsch. Pflanz. Düng.* 39, 1935 (349-356). [G.]
- 631.855:631.841.7—Lundstrom, F. O.; Whittaker, C. W.** Chemical reactions in mixed fertilizers. Effect of ammoniation on the urea component of superphosphate mixtures. *Abstr. Pap. Meet. Div. Fert. Chem.* 1936. *Amer. Fert.* 85, Sept. 19, 1936 (6-7).
- 631.855:631.841.7—Lundstrom, F. O.; Whittaker, C. W.** Chemical reactions in fertilizer mixtures. Effect of ammoniation on urea component of superphosphate mixtures. *Indust. Engng. Chem.* 29, 1937, 61-68.
- 631.855:631.852—Baranov, P. A.** Improving superphosphate. *Zh. Khim. Prom.* 12, 1935 (932-935). C.A. 30 (563).
- 631.855:631.853—Gerlach, M.** Is the action of superphosphate more rapid than that of basic slag? *Phosphorsäure* 4, 1934 (747-748). B.C.A. 55 (384). [G.]
- 631.855:631.853—Wilhelmj, A.** Does superphosphate act more quickly than basic slag? *Phosphorsäure* 4, 1934 (577-600). [G.]
- 631.855:631.853—Truninger, E.** Comparative pot experiments relative to the effect of superphosphate and basic slag applied in the form of top-dressings. *Superphosphate* 9, 1936 (46-50).
- 631.856—Rieten, J. v. d.** Precipitated dialuminum phosphate mineral fertilizer. *Cong. Int. Tech. Chim. Indust. Agric. 4th Cong. Brussels* 2, 1935 (388-396). *Inst. Belge Agric. Better. Pub.* 6, 1935 (407). [F.]
- 631.856—Dawson, R. B.** Compost and fertilizers in relation to greenkeeping. 6. Miscellaneous fertilizers. Fish guano. *J. Biol. Greenh. Res.* 4, 1936 (198-199).
- 631.856:631.812—Khelifets, D.** The composition and properties of iron phosphates obtained under different precipitating conditions. *Khim. i. Zashch. Zemled.* No. 5, 1936 (1-16). [R.]

# FERTILIZERS AND GENERAL AGRONOMY

**631.858—Jacob, K. D. ; Bartholomew, R. P. et al.** Nutrient value of the phosphorus in calcined phosphate as determined by growth of plants in greenhouse experiments. *J. Agric. Res.* 50, 1935 (837-848).

**631.858—Marshall, H. L. ; Reynolds, D. S. et al.** Phosphate fertilizers by calcination process. Experiments with different phosphates. *Indust. Engng. Chem.* 27, 1935 (205-209). C.A. 29 (1925).

**631.858—Chavannes, H.** Basiphosphate and its cultural effects. *Bull. Assoc. Chim. Fr.* 53, 1936 (254-260). F.e.

**631.858—Krügel, C. ; Dreyspring, C.** Experiments carried out by the Hamburg Agricultural Experiment Station. 44. Calcined phosphate of a recent origin (supertomasyna, supra-phosphate and basi-phosphate) compared with superphosphate and basic slag. *Superphosphate* 9, 1936 (101-110). E.F.G.

**631.858 Krügel, C. ; Dreyspring, C.** Experiments carried out by the Hamburg Agricultural Experiment Station. 44. Calcined phosphate of a recent origin, supertomasyna, supra-phosphate and basi-phosphate compared with superphosphate, dicalcium phosphate and basic slag. *Superphosphate* 9, 1936 (121-132). E.F.G.

**631.858 Serralles, J. J., Jr.** Comparative efficiency of calcined phosphates. *Soil Sci.* 44, 1937 (175-182).

**631.859.1 Tuorila, P. ; Aarne, T.** The fertilizing value of ammonium phosphate. Results of field trials for the yields 1928-31. *Valt. Maatalousk. julk. No.* 58, 1934 (39). *Herb. Abs.* 4 (259).

**631.859.1 Gilbert, B. E. ; Pember, F. R.** A study of the availability of ammoniated superphosphate and various unusual phosphatic carriers by means of vegetative pot tests. *RI. Agric. Expt. Sta. Bull.* 256, 1936, pp. 24.

**631.859.412 Butkevich, V. V.** On the capacity of plants to utilize difficultly soluble calcium phosphates. *Trudy Tsentr. Nauch. Inst. Sakh. Prom. (Moscow)* 8, 1932 (61-99). E.S.R. 71 (754). R.g.

**631.859.412 Jolibois, P. ; Burgevin, H. et al.** The manurial value of different forms of phosphoric acid. *C.R.* 201, 1935 (1420-1422). F.

**631.859.412 Kurylowicz, B. ; Kwiničidze, M.** On the behaviour of mono- and divalent basic calcium phosphate under different soil conditions. *Suppl. Roczn. Nauk Roln.* 36, 1935 (413-448). H.g.

**631.859.42 Druzhinin, D. V.** Magnesia-phosphate. *Sveklonnoe Polevodstvo* 5, 1936 (37-47). *ForschDienst.* 2 (42).

**631.859.42 Druzhinin, D. V.** A new phosphatic fertilizer. *Khim. Sotsial. Zemled.* No 2-3, 1936 (59-63). R.g.

**631.859.42 Druzhinin, D. V. ; Nikitin, V. F. ; Tanin, K. E.** Evaluation of the new phosphoric fertilizers produced from dunite. *Trudy Nauch. Inst. Udol.* No. 129, 1936 (57-65). R.g.

**631.859.42 : 631.812 Pestov, N. E. ; Grevtsova, L. F.** The manufacture of a phosphate-magnesium fertilizer from dunite. *Trudy Nauch. Inst. Udol.* No. 129, 1936 (12-16). R.g.

# BIBLIOGRAPHY OF SOIL SCIENCE

## 631.86.7 ORGANIC FERTILIZERS (ANIMAL AND VEGETABLE)

- 631.86 7—Dragunov, S. S. Huminic fertilizers. *Zh. Prikl. Khim.* 7, 1934 (818-824). B.C.A. 54 (165).
- 631.86 7—Stöckli, A. The specific effect of the so-called humus manures. *Schweiz. Landw. Monatsh.* 12, 1934, pp. 64. [G.]
- 631.86 7—Weigert, J.; Fürst, F. Experiments with fermented and ordinary manure. *Ztschr. Pflanz. Düng.* 1313, 1934 (473-509). [G.]
- 631.86 7 Feodorovsky, M. T. Organic manures and their application in agriculture. *Khim. Sotsial. Zemled.* Nos. 11-12, 1935 (45-54). [R.]
- 631.86 7—Kamerman, P. Organic fertilizers and their application. *Farm. S. Africa* 10, 1935 (32).
- 631.86 7: 631.461.1 3 Burban, E. The humification of organic matter and manures in the soil. *J. Fabr. Sucre* 76, 1935 (143). Z.P.D. 41 (379).
- 631.86 7: 631.461.1 3 Hansen, F. The mineralization of manure nitrogen. *Nord. JordbrForsk.* 5 7, 1935 (192-202). [Da.]
- 631.86 7: 631.461.1 3—Simon, K. Studies of humus production from farm manure. *Ztschr. Pflanz. Düng.* 40, 1935 (178-189). [G.]
- 631.86 7: 631.461.1 3 Mukerji, B. K.; Vishnoi, S. L. A biochemical study on the decomposition of farmyard manure and sulphate of ammonia in the paddy soils of the Central Provinces. *Indian J. Agric. Sci.* 6, 1936 (17-32).
- 631.86 7: 631.461.1 3 Raju, M. S. Studies on the availability of nitrogen of the organic nitrogenous manures. I. Influence of carbohydrates on nitrification. *Zbl. Bakt.* 94, 1936 (403-413). [E.]
- 631.86 7: 631.461.1 3 Yoshimura, K.; Nagata, A. Studies on the putrefaction of organic manures. *J. Sci. Soil Japan* 10, 1936 (185-188). [J.]
- 631.86 7: 631.81 Machwirth, W. Comparison of organic manures in relation to the maintenance and improvement of soil productivity: stall manure, artificial manure, straw and green manuring. *Kuhn-Arch.* 37, 1934 (269-316). B.C.A. 54 (866). [G.]
- 631.86 7: 631.81—Lemmermann, O.; Engel, H.; Behrens, W. U. The influence of artificial fertilizers and manure on the fertility of the soil. *Ztschr. Pflanz. Düng.* 37, 1935 (270-287). [G.]
- 631.86 7: 631.81—Shcherba, S. V.; Brodskaya, P. I.; Donde, G. Z. Comparison of manure and mineral fertilizers. *Miner. Udob.* No. 4, 1935 (72-85). [R.]
- 631.86 7: 631.81—Blanck, E. A twelve-year experiment on the uptake of soil nutrients by plants with organic and mineral fertilizing. *J. Landw.* 84, 1936 (1-36). [G.]
- 631.86 7: 631.816.3—Rippert, P. A new process for the maintenance and improvement of soil fertility. *Deut. Landw. Pr.* 62, 1935 (639). J.H.B. 4 (427). [G.]
- 631.86 7: 632.953—Madaus, G.; Schindler, H. The influence of different manurings on the bactericidal and fungicidal effect of aqueous *Clematis recta* extracts. *Biol. Zbl.* 56, 1936 (167-173). [G.]
- 631.86—Berkner, F. A contribution to the problem of soil fertility. *Bodenk. Pflernähr.* 1, 1936 (88-95). [G.]

# FERTILIZERS AND GENERAL AGRONOMY

- 631.86—Villegas, V.; Ynalvez, L. A.** The fertilizing constituents in the solid excreta of sheep and goats. *Philipp. Agrist.* 25, 1936 (161-167).
- 631.86—Collison, R. C.; Conn, H. J.** Farm manure. Its value and conservation. *Farm. Res.* 3, No. 2, 1937 (10, 13). E.S.R. 76 (762).
- 631.86—Villegas, V.; Ynalvez, L. A.** The amount and value of plant food in the solid excreta of Philippine carabaos. *Philipp. Agrist.* 25, 1937 (841-846).
- 631.86:545—Sauerlandt, W.** Investigations on farmyard manure. *Ztschr. Pflanz. Düng.* 133, 1934 (433-452). [G.]
- 631.86:545—Sauerlandt, W.** Farmyard manure investigation. *Bodenk. PflErnähr.* 1, 1936 (223-235). [G.]
- 631.86:545—Mitscherlich, E. A.** Experiments on the determination of potash and phosphate of farmyard manure. *Bodenk. PflErnähr.* 2, 1937 (211-229). [G.]
- 631.86:577.17—Nehring, K.** Hormones and plant growth. *Mitt. Landw.* 50, 1935 (911-913). [G.]
- 631.86:577.17—Nehring, K.; Möbius, H.** The effect of materials of oestrogenic nature on plant growth. *Ztschr. Pflanz. Düng.* 44A, 1936 (95-140). [G.]
- 631.86:631.416—Hanstein.** Farmyard manuring and the potash-phosphate content of soil. *Deut. Landw. Pr.* 62, 1935 (82). Z.P.D. 41 (376). [G.]
- 631.86:631.417.2—Chekalov, K. I.; Moor, N. G.** The significance of separate fractions of organic matter for the formation of humic compounds in soil. *Trudy LOMU.A.I* No. 37 (No. 1), 1935 (11-34). *Pedology* 1936 (927). [R.]
- 631.86:631.461—Stepanova, M. L.** Bacterial numbers in differently prepared manures. *Mikrobiologia* 2, 1933 (277). Z.P.D. 37 (357).
- 631.86:631.461—Glathe, H.** Rotting of stall manure with special reference to the anaerobic flora. *Zbl. Bakt.* 91, 1934 (65-101). C.A. 29 (6690).
- 631.86:631.461.1.3—Kúthy, A. v.; Baskay-Tóth, B.** Chemical changes during fermentation of dung. *Cong. Int. Tech. Chim. Indust. Agric. 5th Cong. Holland* 1, 1937 (261-266). B.C.A. 56 (955).
- 631.86:631.461.3—Niklewsky, B.** The distribution of nitrifying bacteria in different types of stable manure. *Zbl. Bakt.* 90, 1934 (193-212). C.A. 29 (270).
- 631.86:631.461.3—Bengtsson, N.; Barthel, C.** Nitrification of stable manure in cultivated soils. *Medd. Cent.Aust. Forsöksr. Jordbr.* 454, 1935, pp. 31. [Swc.]
- 631.86:631.461.5—Dhar, N. R.; Mukherji, S. K.** Nitrogen fixation with cow dung. *Nature* 138, 1936 (1060). B.C.A. 56 (166). C.A. 31 (1930).
- 631.86:631.811.2—Sauerlandt, W.** Plant physiological evaluation of phosphoric acid in farm manures. *Ztschr. Pflanz. Düng.* 42, 1936 (187-229); 43, 1936 (341-350). B.C.A. 55 (611). [G.]
- 631.86:631.811.2—Hartley, K. T.** An explanation of the effect of farmyard manure in Northern Nigeria. *Emp. J. Expt. Agric.* 5, 1937 (254-263).



## BIBLIOGRAPHY OF SOIL SCIENCE

- 631.86 : 631.811.9**—**Sidappa, G. S. ; Subrahmanyam, V.** Investigations on the rôle of organic matter in plant nutrition. Part V. Influence of minute quantities of certain forms of organic matter on the growth of barley. *Proc. Indian Acad. Sci.* 1, 1934 (229-246).
- 631.86 : 631.812**—**Glaerum, O.** Storage experiments with farmyard manure. *Mell. Stat. Forsøkssta. Moistad, 1932, 1933* (3-54). *Med. Zbl.* 6 (142). (N.)
- 631.86 : 631.812**—**Groth, K.** The production and value of "Schatedelmist". *Zuckerrübenbau* 15, 1933 (114-118). *Bud. Zbl.* 65 (221).
- 631.86 : 631.812**—**Mamchenko ; Romashkevich.** Nitrogen losses in the hot and cold preparation of manure. *Trans. Int. Soc. Soil Sci. Soviet Sect. 4th Comm.* 1933 (231-233).
- 631.86 : 631.812**—**Bamberg, K.** Nitrogen loss with spreading and ploughing in of farmyard manure. *J. Landw. Riga* No. 10, 1934. *Z.P.D.* 41 (101).
- 631.86 : 631.812**—**Keller, H.** The preparation and rotting of manure. *J. Landw.* 82, 1934 (289-306). (G.)
- 631.86 : 631.812**—**Landbau u. Technik.** Interesting experimental results on nitrogen losses from farmyard manure applied to grassland. *Landb. u. Tech.* 10, 1934 (6-7). *J.L.B.* 4 (60).
- 631.86 : 631.812**—**Niklewski, B.** On biologically active humus. *Rocz. Nauk Roln.* 33, 1934 (371-381). (P.e.)
- 631.86 : 631.812**—**Trzcinski, W.** Investigations on the storage of farmyard manure. *Rocz. Nauk Roln.* 33, 1934 (383-405). (P.e.)
- 631.86 : 631.812**—**Ehrenberg, P.** Hot fermentation process. *Ztschr. Pflanz. Düng.* 37, 1935 (340-342). (G.)
- 631.86 : 631.812**—**Fürst, F.** Management of manure and manure sites. *Landb. u. Tech.* 11, 1935 (5-6).
- 631.86 : 631.812**—**Lennermann, O.** Some farmyard manure problems. *Ztschr. Pflanz. Düng.* 41, 1935 (82-100). (G.)
- 631.86 : 631.812**—**Niklewski, B.** The hot fermentation of manure according to H. Kranz. *Ztschr. Pflanz. Düng.* 37, 1935 (93-112). (G.)
- 631.86 : 631.812**—**Nommik, A.** The rapidity of decomposition and loss of farmyard manure nitrogen. *Ztschr. Pflanz. Düng.* 39, 1935 (61-85). (G.)
- 631.86 : 631.812**—**Odland, T. E. ; Knoblauch, H. C.** A comparative test of different bedding materials and chemical supplements with cow manure applied in a three-year rotation. *R.I. Agric. Expt. Sta. Bull.* 251, 1935, pp. 10.
- 631.86 : 631.812**—**Romashkevich, I. F.** The effect of chlorine, sulphur, sodium sulphate, sodium and brown coal on the decomposition of manure. *Khim. Sotsial. Zoolod.* Nos. 11-12, 1935 (34-44). (R.)
- 631.86 : 631.812**—**Rosam, V.** Preparation of a manure of good quality according to the Chénévès process. *Int. Cong. Sci. Management, London, 1935. Agric. Sect. Papers* (25-26).
- 631.86 : 631.812**—**Chauvin, A.** Notes on the manufacture of semi-artificial manure. *Bull. Econ. Indochine* July-Aug. 1936 (527-539). (F.)
- 631.86 : 631.812**—**Henglein, F. A. ; Salm, L.** Preservation of manure by addition of acid. *Angew. Chem.* 49, 1936 (260-261). *B.C.A.* 55 (563).

# FERTILIZERS AND GENERAL AGRONOMY

- 631.86 : 631.812—Kaniyets, I. I.** Losses in farmyard manure during storage. *Sborn. Rab. VNIIS*, 1936 (321-351). [R.]
- 631.86 : 631.812 Kudsin, I ; Poberezhnik, W.** The regulation of microbiological processes in manure storage. *Mikrobiologia* 4 1935 (90-101). *Zbl. Bakt.* 94 (280). [R.]
- 631.86 : 631.812—Liebener, K. Heinrich.** Nitrogen losses from farmyard manure due to spreading on the surface before ploughing. *Kühn-Arch.* 42, 1936 (235-280). [G.]
- 631.86 : 631.812—Malwald, K.** The ways and possibilities of improving the storage of farmyard manure. *ForschDienst.* 2, 1936 (451-456). [G.]
- 631.86 : 631.812—Makrinov, I. A.** The biological alteration of plant residues. IV. Conservation of manure. *Zbl. Bakt.* 95, 1936 (261-264). *C.A.* 31 (1144).
- 631.86 : 631.812—Mironivsky, I. S. ; Ushats'ka, A. A.** Storage of cow manure prepared with different litter-excrement ratios. *Trudi Inst. Agriogruut. Khim.* 2, 1936 (31-48). [U.r.]
- 631.86 : 631.812—Niklewski, B. ; Eysymontt, J. ; Kamin-ski, Z.** Hot-manure process. *Rocz. Nauk Roln.* 36, 1936 (243-264). *C.A.* 30 (7271). [P.g.]
- 631.86 : 631.812—Ōno, K. ; Katsutani, H.** Investigations on the stable manures produced in Yamaguchi prefecture. *J. Sci. Soil Japan* 10, 1936 (163-169). [J.e.]
- 631.86 : 631.812—Romashkevich, I. F.** The effect of  $\text{Cl}$ ,  $\text{S}$ ,  $\text{NaHSO}_4$  and brown coal on farmyard manure. *Khim. Sotsial. Zoolod.* No. 6, 1936 (23-30). [R.]
- 631.86 : 631.812—Ruschmann, G.** Nitrogen losses in the application of farmyard manure in small peasant holdings. *Deut. Landt. Pr.* 63, 1936 (281). [G.]
- 631.86 : 631.812—Scammell, S. E.** A summary of some Continental data concerning natural manure. *J. Min. Agric.* 42, 1936 (1226-1234).
- 631.86 : 631.812—Schmidt, K.** Artificial manure and edelmist. *Mitt. Landw.* 51, 1936 (554-555). [G.]
- 631.86 : 631.812—Shrikhande, J. G.** The hot fermentation process of composting under tropical and sub-tropical conditions. *Trop. Agrist.* 87, 1936 (9-11).
- 631.86 : 631.812—Siegel, O.** The experimental data underlying suitable means of preparing farmyard manure under farm conditions. *Ztschr. Pflanz. Düng.* 43, 1936 (186-220).
- 631.86 : 631.812—Fritzlar, H.** Fertility from wheat straw. *Farmer's Week. S. Africa* 54, 1937 (39).
- 631.86 : 631.812—Glathe, H. ; Metzen, O.** Comparative farmyard manure storage tests. *Bodenk. PflErnähr.* 5, 1937 (192-208). [G.]
- 631.86 : 631.812—Glathe, H. ; Seidel, W.** Investigations on the storage of stable manure under strictly anaerobic conditions. *Bodenk. PflErnähr.* 5, 1937 (118-128). [G.]
- 631.86 : 631.812—Kertscher, F.** Six-year farmyard manure tests of the value of hot fermentation. *Bodenk. PflErnähr.* 5, 1937 (129-176). [G.]
- 631.86 : 631.812—Lehner, A.** Comparative biological investigations of hot-fermented and stacked farmyard manure. *Bodenk. PflErnähr.* 5, 1937 (209-234). [G.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.86 : 631.812—Malwald, K. ; Siegel, O.** Investigations on the storage and effect of stable manure. *Bodenk. PflErnähr.* 5, 1937 (70-104). [G.]
- 631.86 : 631.812—Scheffer, F. ; Zöberlein, H.** Investigations on the most suitable methods of handling stable manure. *Bodenk. PflErnähr.* 5, 1937 (47-69). [G.]
- 631.86 : 631.812—Schmidt, F.** Investigations on the expenditure of work in the preparation of farmyard manure. *Bodenk. PflErnähr.* 5, 1937 (177-192). [G.]
- 631.86 : 631.812—Weigert, J. ; Fürst, F.** Investigations on problems of storage of stable manure. *Bodenk. PflErnähr.* 5, 1937 (104-118). [G.]
- 631.86 : 631.855—Dix, W.** The conservation of liquid and stable manures with superphosphate. *Das Superphosphat* 11, 1935 (105-107). C.A. 30 (1495). [G.]
- 631.86 : 631.855—Midgeley, A. R.** Relative effect of different superphosphates on the preservation of nitrogen in cow manure. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (299-301).
- 631.86 : 632.51—Ehrenberg, P.** The question of weed seeds in farmyard manure. *Ztschr. Pflanz. Dung.* 39, 1935 (85-94). [G.]
- 631.86 : 636.5—Okuda, A. ; Iwata, T.** On the mineralization of the nitrogen of fowl excrement in soils. *J. Sci. Soil Japan* 8, 1934 (309-314).
- 631.86 : 636.5—Taylor, A. J.** Poultry manure: its composition and use. *Farm. S. Africa* 11, 1936 (82).
- 631.86 : 636.5—Ling, A. W. ; Muir, W. R.** The effect of poultry on the chemical composition of herbage and soil. *J. Min. Agric.* 43, 1937 (1056-1067).
- 631.862—Schuppli, P.** Modern liquid manuring in the valley and on the Alps. *Rept. 3rd Grassland Cont. Zurich* 1934 (291-296). *Herb. Abs.* 5-40. [G.]
- 631.862 Truninger, E. ; Keller, F.** The manurial effect of liquid manure. *Landw. Jahrb. Schweiz* 48, 1934 (95-131). Z.P.D. 37 (116).
- 631.862—Rheinwald, H. ; Preuschen, G.** Investigations on the application of liquid manure and manure drainage liquors in agricultural practice. *Landw. Jahrb.* 81, 1935 (691-741). [G.]
- 631.862 : 631.812—Gerlach, M.** Liquid-manure pits and the treatment and application of liquid manure. *Das Superphosphat* 11, 1935 (73-77). C.A. 29 (7001). [G.]
- 631.862 : 631.812—Glathe, H.** Production, handling and application of artificial manures, compost and liquid manure. *ForschDienst.* 1, 1936 (749-752). [G.]
- 631.862 : 631.816.3—Knudsen, J. P.** Liquid manure and its application. *Vort. Landbr.* 53, 1934 (518). Z.P.D. 44 (165).
- 631.867.4—Okuda, S.** The manurial value of nitrogen in sardine cake. *J. Sci. Soil Japan* 11, 1937 (337-342). [J.e.]
- 631.871—Flieg ; Gross.** Experiments on manuring with straw. *Ztschr. Pflanz. Dung.* 13B, 1934 (380-384). C.A. 29 (1926). [G.]
- 631.871—Burmistrov, F. ; Poliansky, N.** Sapropel as a fertilizer for socialist fields. *Khim. Sotsial. Zemled.* Nos. 11-12, 1935 (62-76). [R.g.]

# FERTILIZERS AND GENERAL AGRONOMY

**631.871—Dragunov, S. S.** Characteristics of raw material for the preparation of humus manures. *Trudy Nauch. Inst. Udob.* No. 127, 1936 (14-18). [R.g.]

**631.871—Kurchatov, P. A. ; Buziuk, M. I.** Utilization of sapropels as manures. *Trudy Belorussk. S. Kh. Inst.* 5, 1936 (149-157). [R.g.]

**631.871 Zusser, E. E.** Ammonia treatment of plant material at different temperatures and under different pressures. *Trudy Nauch. Inst. Udob.* No. 127, 1936 (62-66). [R.g.]

**631.871 : 547.458.84 Sandhoff, H.** Chemico-physical investigations on lignin and its effect as a soil and plant manure. *Kühn-Arch.* 38, 1933 (107-170). [G.]

**631.871 : 631.417.4—Opitz, K. ; Rath sack, K.** Straw manuring and the yield and nitrogen and carbon content of a light soil. *Ztschr. Pflanz. Düng.* 45, 1936 (276-296). [G.]

**631.871 : 632.556.7 DeBusk, E. F.** Water hyacinth and its use in fertilizing farm crops. *Citrus Indust.* 18, No. 7, 1937 (10, 15). C.A. 31 (5921).

**631.871 : 633.15 Arnold, H. C.** The effect on the following crop of ploughing under maize trash. *Rhod. Agric. J.* 31, 1934 (708-710).

**631.871 : 633.51 Rounce, N. V.** The conversion of cotton seed into compost and the disposal of surplus cotton seed. *E. Afric. Agric. J.* 1, 1936 (352, 414).

**631.871 : 633.51 Skriabin, F. A.** Cotton stems as fertilizer for cotton fields. *Bull. SovnizNIKhl.* 4, 1936 (78-85). [R.e.]

**631.871 : 633.61 Stieglitz, C. R. v.** Cane trash and soil organic matter. *Abs. Pap. 5th Cong. Int. Soc. Sug. Cane Tech. Agric. Sect. Australia* 1935; *Hawaii. Plant. Rec.* 39, 1935 (283).

**631.871 : 633.63 Guyon, G.** The value of beet leaves and collars as nitrogenous fertilizer. *Rech. Fert. Sta. Agron. Douai*, 1934, 1935 (78-80). C.A. 29 (7003).

**631.871 : 633.63 West, W. J.** The disposal of sugar beet by-products. *J. Roy. Agric. Soc.* 96, 1936 (148-157). J.H.B. 5 (B. 36).

**631.871 : 634.771 Rodríguez, G.** The chemical composition of banana trash. *Trop. Agric. Trin.* 13, 1936 (227-228).

**631.871 : 634.774 Tam, R. K. ; Magistad, O. C.** Chemical changes during decomposition of pineapple trash under field conditions. *Soil Sci.* 41, 1936 (315-327).

**631.873 Gold Coast Farmer.** Organic manures. *Gold Coast Farmer* 111, 1935 (169).

**631.873 Salgado, M. L. M. ; Chinnarasa, E.** Note on the manurial value of two Ceylon sea-weeds. *Trop. Agricult.* 87, 1936 (385-387).

**631.873 : 631.811.7 Vincent ; Sarazin ; Herviaux.** The sulphur in seaweed, sea mud and rain waters in Brittany. *C.R.* 21, 1935 (1032-1034). C.A. 30 (1920). [F.]

**631.874 Alonso, C. S.** A test of some green-manure crops. *Philipp. Agricult.* 23, 1934 (543-558). C.A. 29 (876).

**631.874 Berkner, F.** Green manuring problems. *Ztschr. Pflanz. Düng.* 40, 1935 (82-108). [G.]

**631.874—Kulzhinsky, S. P.** Green manuring in our subtropics in their southern cotton and vineyard zones. *Khim. Sotsial. Zemled.* Nos. 11-12, 1935 (28-33). R.

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.874—Lemmermann, O.** Some green manuring problems. *Ztschr. Pflanz. Düng.* 37, 1935 (205-222). [G.]
- 631.874—Adams, J. E.; Roller, E. M.; Boggs, H. M.** A green manure fertilizer study on Norfolk sand. *Soil Sci.* 42, 1936 (175-184).
- 631.874—Berkner, F.** Green manuring experiments. *Ztschr. Pflanz. Düng.* 44, 1936 (140-154). [G.]
- 631.874—Eden, T.** The use of green manures and waste materials. *Tea Quart.* 9, 1936 (59-68).
- 631.874—Sprague, H. B.** The value of winter green manure crops. *N. J. Agric. Expt. Sta. Bull.* 609, 1936, pp. 192. E.S.R. 76 (324).
- 631.874—Doyle, H. C.** Green manuring in Southern Nigeria. *Emp. J. Expt. Agric.* 5, 1937 (248-253).
- 631.874—Kerr, H. W.** The rôle of legumes in rejuvenating old soils. *Cane Grow. Quart. Bull.* 5, 1937 (32-35).
- 631.874—Kulzhinsky, S. P.** Record yields of green manure crops. *Soviet Subtrop.* No. 6, 1937 (19-26). [R.]
- 631.874—Scarlett, R. L.** The promotion of soil fertility and health. *Roy. Caledonian Hort. Soc. Edinburgh March 2nd, 1937* pp. 10.
- 631.874 : 581.116—Coster, C.** The transpiration of different types of vegetation in Java. *Korte Meded. Boschbouwsta.* 58, 1937, pp. 24. *Tectona* 30, 1937. [D.]
- 631.874 : 631.416.1—Morgan, E. T.** The ploughing in of green crops. *J. Dept. Agric. W. Aust.* 12, 1935, 465-468. *Herb. Abs.* 6 (148).
- 631.874 : 631.416.1—Shrikhande, J. G.** Utilization of certain forms of inorganic nitrogen during the decomposition of plant materials in the soil. *Indian J. Agric. Sci.* 6, 1936 (767-776).
- 631.874 : 631.531.2—Wood, R. C.; Herbert, A. D.** A note on the sowing of green manure crops. *Trop. Agric. Ind.* 11, 1934 (295). *Herb. Abs.* 5 (40).
- 631.874 : 631.586—Theron, J. J.** Green manuring. *Univ. Pretoria, Ser. I.* 33, 1936, pp. 11. [E.A.]
- 631.874 : 631.816.3—Albrecht, W. A.** Methods of incorporating organic matter with the soil in relation to nitrogen accumulations. *Missouri Agric. Expt. Sta. Res. Bull.* 249, 1936, pp. 16.
- 631.874 : 632.954—Scarlett, R. L.** Cleaning dirty land to produce soil fertility. *Soil J. Agric.* 20, 1937 (41-45).
- 631.874 : 633.14—Andrews, W. B.** The effect of nitrogen content of rice on its rate of decomposition. *Soil Sci.* 40, 1935 (219-221).
- 631.874 : 633.177—Rhodesia Agricultural Journal.** Munga and other grass-type crops as green manure. *Rhod. Agric. J.* 33, 1936 (879-880). *Herb. Abs.* 7 (77).
- 631.874 : 633.3—Haan, K. de.** Report on a green manure experimental field. *Meded. Inst. Suikerbiet.* No. 8, 1935 (235-244).
- 631.874 : 633.3—McKee, R.** Summer crops for green manure and soil improvement. *U.S.D.A. Farm Bull.* 1750, 1935, pp. 16.
- 631.874 : 633.3—Rheinwald, H.** Green manure in Central East Germany. *Pflanzenbau* 11, 1935 (369-383). *Herb. Abs.* 5 (200).
- 631.874 : 633.364—Pieper, J. J.; Sears, O. H.; Bauer, F. C.** Lespedeza in Illinois. *Ill. Agric. Expt. Sta. Bull.* 416, 1935, pp. 347.

## FERTILIZERS AND GENERAL AGRONOMY

- 631.874 : 633.366**—Badger, C. J.; Snider, H. J. The composition of the spring growth of sweet clover as influenced by previous fall treatment. *J. Amer. Soc. Agron.* 25, 1933 (105-107).
- 631.874 : 633.367**—Westsik, V. Lupins as green manure for maize and oats; the respective values of ploughing under in spring and autumn. *Köstelek* 40, 1934 (900). *Herb. Abs.* 5 (40). 11.
- 631.874 : 633.375**—Paul, W. R. C. Departmental notes. The value of *Tephrosia purpurea* as a green manure in the dry zone. *Trop. Agricult.* 87, 1936 (176-177).
- 631.874 : 633.378**—Baron-Hay, G. K. The Tangier pea. *J. Dept. Agric. W. Aust.* 13, 1936 (508-513). *Bull. I.I.* 35 (254).
- 631.874 : 633.524.1**—McChlery, R. Notes on the optimum time for ploughing under a green manure crop of sunnhemp. *Rhod. Agric. J.* 33, 1936 (829-837).
- 631.874 : 633.524.1**—Singh, B. N.; Singh, S. N. Analysis of *Crotalaria juncea* with special reference to its use in green manuring and fibre production. *J. Amer. Soc. Agron.* 28, 1936 (216-227).
- 631.874 : 633.524.1**—Kiryu, T.; Akiyama, K. Studies on the numbers of micro-organisms in the soil added with *Crotalaria juncea* L. *Rept. Govt. Sug. Expt. Sta. Taiwan, Formosa* No. 4, 1937 (163-171). [J.e.]
- 631.874 : 633.524.1**—Misra, K. K. Sunnhemp, as a green manure crop in the United Provinces. *Allahabad Farmer* 11, 1937 (262-268).
- 631.874 : 633.524.1**—Singh, B. N.; Singh, S. N.; Srivastava, M. B. Photoperiodism, a factor in determining the manurial efficiency and distribution of *Crotalaria juncea*. *J. Amer. Soc. Agron.* 29, 1937 (123-133).
- 631.875**—Beckley, V. A. Organic manures with special reference to composts. *Kenya Dept. Agric. Bull.* 9 of 1934, pp. 45.
- 631.875**—Eden, T. *et al.* Composting by the Indore process. *Tea Quart.* 7, 1934 (160-170).
- 631.875**—Joachim, A. W. R.; Kandiah, S. Chemical studies on compost manure. *Trop. Agricult.* 83, 1934 (277-293).
- 631.875**—Kandiah, S. Chemical studies on compost manure. *Trop. Agricult.* 83, 1934 (277-293).
- 631.875**—Geslin, H.; Marcel, M.; Servy, J. The use of artificial manure in horticultural beds. *C.R. Acad. Agric.* 21, 1935 (596-600). *C.A.* 29 (5574). [F.]
- 631.875**—Niklewsky, B., Jr. Reducing power of decomposition products in composts. *Dossaad. Robn.* 9, 1935 (12-18). [Pl.g.]
- 631.875**—Eden, T. Recent compost literature. *Tea Quart.* 9, 1936 (13-16).
- 631.875**—McCool, M. M. Composts. *Boyle Thompson Inst. Contr.* 8, 1936 (263-281).
- 631.875**—Timson, S. D. Organic manure. Some further notes on compost. *Rhod. Agric. J.* 33, 1936 (175-181).
- 631.875**—Turk, L. M. Synthetic manure production in Michigan. *Mich. Agric. Expt. Sta. Circ.* 157, 1936, pp. 11. *E.S.R.* 75 (753).
- 631.875**—Farmer's Weekly, South Africa. The secret of healthy stock and crops lies in the soil. *Farmer's Week. S. Africa* 53, 1937 (1607-1608).

# BIBLIOGRAPHY OF SOIL SCIENCE

**631.875 : Farmer's Weekly, South Africa.** Sick soils mean sickly crops, stock and people. The Indore process is a restorative for a long chain of evils. *Farmer's Week. S. Africa* 54, 1937 (203).

**631.875 : Wall, P. F.** "Natural" fertilizers for real soil fertility. *Farmer's Week. S. Africa* 53, 1937 (1517-1519).

**631.875 : 631.461.1.3 - Rokitskaya, A.** Microbiological and fermentative methods for treatment of straw. *Probl. Zhivotnovod.* 6, 1933 (31-35). *Bied. Zbl.* 6A, 1935 (142). *B.C.A.* 55 (385).

**631.875 : 631.461.1.3 - Bogopolsky, M. D.** The technique of the microbiological investigation of composts. *Laboratornaia Praktika* No. 8, 1934 (8-9). *Pedology* 1936 (935). [R.]

**631.875 : 631.461.1.3 - Smith, F. B.; Brown, P. E.** The decomposition of straw in the production of artificial manure. *Iowa St. Coll. J. Sci.* 8, 1934 (409-413). *C.A.* 29 (1201).

**631.875 : 631.461.1.3 - Tishchenko, V. V.** A study of the processes of decomposition of vegetable residues. *Leningr. Univ. Uchen. Zap.* 1, 1935 (117-132). [R.]

**631.875 : 631.461.1.3 - Maurer, E.; Storck, A.** Comparative investigations of the course of rotting of composts stored in silos and piles. *Landw. Jahrb.* 82, 1936 (845-882). *C.A.* 30 (7271). [G.]

**631.875 : 631.461.1.3 - Bedsole, M. R.** The effect of water-soluble and total nitrogen and of drying on the rate of nitrification of some common Florida weeds. *J. Amer. Soc. Agron.* 29, 1937 (815-821).

**631.875 : 631.547.1 - Lawrence, W. J. C.; Newell, J.** Experiments on seed and potting composts. II. Physical condition. *Gard. Chron.* 102, 1937 (67-68).

**631.875 : 631.812 - Buchanan, G. F.** Compost making. *Allahabad Farmer* 9, 1935 (246-247).

**631.875 : 631.812 - Burban, E.** So-called artificial farmyard manure making and the sugar beet processing industries. *J. Fabr. Sucre* 76, 1935 (37). *Z.P.D.* 41 (379).

**631.875 : 631.812 - Deuss, J. J. B.** Artificial manure. *Rev. Bot. Appl. Bull.* 161, 1935 (1-17). [F.]

**631.875 : 631.812 - Howard, A.** The waste products of horticulture: their utilization as humus. *Sci. Hort.* 3, 1935 (213-214).

**631.875 : 631.812 - Howard, A.** The manufacture of humus by the Indore process. *J. Roy. Soc. Arts* 84, 1935 (25-59). *C.A.* 30 (2304).

**631.875 : 631.812 - Howard, A.** The manufacture of humus from the waste products of tea estates. *Brit. Sci. Guild Pub.* 1935 (8). *Hort. Abs.* 5 (174).

**631.875 : 631.812 - Tambe, G. C.; Wad, Y. D.** Humus manufacture from cane trash. *Int. Sug. J.* 37, 1935 (260-263).

**631.875 : 631.812 - Albrecht, W. A.** Artificial manure production on the farm. *Missouri Agric. Expt. Sta. Bull.* 369, 1936, pp. 12.

**631.875 : 631.812 - Bagot, A. G. D.; Jackson, F. K.** Composting tea estate wastes. *Times of Ceylon*, 1936, pp. 24, *rev. in Tea Quart.* 9, 1936 (107-109).

**631.875 : 631.812 - Dix, W.** Experiments on the preparation of artificial manure. *Landw. Jahrb.* 82, 1936 (439-452). [G.]

**631.875 : 631.812 - Glathe, H.** Production, handling and application of artificial manures, compost and liquid manure. *Forsch.Dienst.* 1, 1936 (749-752). [G.]

## FERTILIZERS AND GENERAL AGRONOMY

- 631.875 : 631.812**—**Nature**. Manufacture of humus by the Indore process. *Nature* 137, 1936 (286).
- 631.875 : 631.812**—**Subrahmanyam, V.** Some aspects of composting town refuse with sewage and night-soil. *Agric. Live-Stk. India* 6, 1936 (441-450).
- 631.875 : 631.812**—**Timson, S. D.** Organic manure in relation to wheat growing in Rhodesia. *Rhod. Agric. J.* 33, 1936 (116-126).
- 631.875 : 631.812**—**Wood, R. C.** Village waste. *Emp. J. Expt. Agric.* 4, 1936 (357-363).
- 631.875 : 631.812**—**Beckley, V. A.** Composts and composting. *E. Afric. Agric. J.* 2, 1937 (384-386, 470-473).
- 631.875 : 631.812**—**Demolon, A. ; Burgevin, H.** The preparation of artificial farmyard manure. *Bull. Soc. Encour. Indust. Nat.* 136, 1937 (297-300). C.A.S.B. 4 (3).
- 631.875 : 631.812**—**Farmer's Weekly, South Africa.** Odourless compost from night soil. *Farmer's Week. S. Africa* 54, 1937 (129).
- 631.875 : 631.812**—**Garner, H. V.** Composts. *J. Min. Agric.* 44, 1937 (330-334).
- 631.875 : 631.812**—**Howard, A.** Manufacture of humus by the Indore process. *S. Afric. Sug. J.* 21, 1937 (33-47, 97-115). *Int. Sug. J.* 39, 1937 (315). B.C.A. 56 (1097).
- 631.875 : 631.812**—**Stephens, A. L.** Compost-making in Uganda. *E. Afric. Agric. J.* 3, 1937 (113-118).
- 631.875 : 631.812**—**Stoller, B. B. ; Smith, F. B. ; Brown, P. E.** A mechanical apparatus for the rapid, high-temperature microbial decomposition of fibrous, cellulosic materials in the preparation of composts for mushroom cultures. *J. Amer. Soc. Agron.* 29, 1937 (717-723).
- 631.875 : 631.812**—**Timson, S. D.** Compost. A note on methods of reducing the costs. *Rhod. Agric. J.* 34, 1937 (466-472).
- 631.875 : 631.815**—**Wojciechowski, J. ; Wilska, A.** Production value of composts. *Rocz. Nauk Roln.* 36, 1936 (219-242). Plg.
- 631.875 : 633.526.23**—**Layzell, S. C.** The composting of sisal waste. *E. Afric. Agric. J.* 3, 1937 (26-29).
- 631.876 : 631.415.2**—**Takada, K. ; Toda, T.** An experiment on mineralization of the nitrogen of soybean cake and herring cake in strong acid citrus orchard soils. *J. Sci. Soil Japan* 11, 1937 (46-48). Jc.
- 631.876 : 631.461.3**—**Pal, G. B. ; Rakshit, S. C.** Decomposition of oil-cakes and formation of nitrate. *Proc. Nat. Inst. Sci. India* 3, 1937 (213-217).
- 631.876 : 633.853.55**—**Zucker, F.** The value of castor oil cake as a manure. *Mezőg. Kutat.* 10, 1937 (207-218). [H.e.]
- 631.876.9** **Chemical Trade Journal.** Fertilizer from the wood-pulp industry. *Chem. Trade J.* 98, No. 2559, 1936 (466). C.M.I.C. 1936 (No. 594).
- 631.876.9**—**Duchon, F. ; Macek, K.** Experiments with sulphite residues from cellulose production as fertilizers. *Sborn. Čsl. Akad. Zvěd.* 11, 1936 (27-36). [C.z.g.]
- 631.876.9**—**Phillips, M. ; Goss, M. J. ; Brown, B. E. et al.** The ammoniation of waste sulphite liquor and its possible utilization as a fertilizer material. *J. Agric. Res.* 53, 1936 (209-224).



# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.876.9** Nostitz, A. v. Influence of sawdust as stable bedding on soil. *Bodenk. Pflernähr.* 3, 1937 (211-218). [G.]
- 631.876.9 : 631.416.4** Duchon, F. The influence of intensive distilling practice on soil potash. *Sborn. Čsl. Akad. Zemřd.* 10, 1935 (276-280). *Bied. Zbl.* 65 (403). [Cz.]
- 631.876.9 : 631.811.9** Onishchenko, I. K. Industrial wastes, a new form of fertilizers for sugar beet. *Nauch. Zap.* 11, 1934 (69-76). [R.e.]
- 631.876.9 : 633.63** Decoux, L. Value of sugar-factory carbonation scums as fertilizer. *Inst. Belge Amélior. Better. Pub.* 2, 1934 (241-242). *Int. Sug. J.* 37, 1935 (445). B.C.A. 55 (293).
- 631.876.9 : 633.63** Parkes, G. K. The use of factory waste lime. *Brit. Sug. Beet Rev.* 9, 1935 (11-12).
- 631.876.9 : 637.127.3** Nicol, H. Ground casein waste—a source of organic nitrogen. *Fert. Feed. J.* 20, 1935 (162). C.A. 29 (3446).
- 631.876.9 : 664.15** Barke, E. J. The value of molasses as fertilizer. *Cane Grow. Quart. Bull.* 2, 1934 (21-32).
- 631.876.9 : 664.15** Beaufond, L. Nitrogen from molasses. *Rev. Agric. Maurice* 1935 (157-158). F.A.S. 31 (112).
- 631.876.9 : 664.15** Borden, R. J. Some plant food values in molasses and filter cake. *Hawaii. Plant. Rec.* 39, 1935 (180-190).
- 631.876.9 : 664.15** Dhar, N. R. A new method of nitrogen fixation and conservation and reclamation of alkali lands. *Address Indian Acad. Sci. Meet. 19th Dec. 1935*, pp. 46.
- 631.876.9 : 664.15** Dhar, N. R. Problem of utilization of molasses. *Proc. Inst. Chem. India* 7, 1935 (90-106).
- 631.876.9 : 664.15** Soldner, F. Molasses fertilizing. *Deut. Zuckerind.* 60, 1935 (297). Z.P.D. 41 (377).
- 631.876.9 : 664.15** Strohal, D. "Dzibramid", a fertilizer from beet molasses (sludge). *Bull. Soc. Chim. Yougoslav.* 6, 1935 (131-137). C.A. 30 (3150). [G.]
- 631.876.9 : 664.15** Dhar, N. R. Nitrogen transformation in the soil. *Proc. Soc. Biol. Chem. India* 1, 1936 (11).
- 631.876.9 : 664.15** Subrahmanyam, V. Decomposition of cane molasses in the swamp soils. *Agric. Live-Stk. India* 6, 1936 (488-493).
- 631.876.9 : 664.15** Batham, H. N.; Sethi, R. L.; Nigam, L. S. Molasses as manure in the United Provinces. *Indian J. Agric. Sci.* 7, 1937 (291-316).
- 631.876.9 : 664.15** Borden, R. J. Evaluation of nitrogen in molasses. *Hawaii. Plant. Rec.* 41, 1937 (19-24).
- 631.878** Kasatkin, M. Torfakalchen manuring. *Melior. Lort* 3, 1932 (54-57). *Bied. Zbl.* 64 (85). [R.]
- 631.878** Alaska. Peat. *Alaska Agric. Expt. Sta. Bull.* 3, 1933 (3). E.S.R. 73 (19).
- 631.878** Fuchs, W.; Gagarin, R.; Kothny, H. Effect of brown coal and products derived from it on plant growth. *Biochem. Ztschr.* 259, 1933 (85-99). B.C.A. 52 (402). [G.]
- 631.878** Logvinova, Z. V. The effect of organo-mineral fertilizers (humate). *Trans. Int. Soc. Soil Sci. Soviet Sci. 4th Comm.* 1933 (240-241).
- 631.878** Logvinova, Z. V.; Ivanov, A. G. Efficiency of organo-mineral fertilizers. *Trudy Gdronz. Inst. Udob. Leningr. Lab.* 1933 (67-82). B.C.A. 54 (1157). [R.]

## FERTILIZERS AND GENERAL AGRONOMY

**631.878—Engels, O.** The character and significance of the newer types of fertilizers containing humus or coal. *Kunstdünger* 31, 1934 (223-8, 259-63, 290-3, 319-22). C.A. 29 (1568).

**631.878—Jealott's Hill Agricultural Research Bulletin.** Notes on Huminal. *Jealott's Hill Bull.* 3, 1934 (C437).

**631.878—Kabanov, B. A.** The problem of increasing soil fertility with peat. *Trudy Inst. Torfa* 9, 1934 (3-8). *Pedology* 1935 (911). R.

**631.878—Kabanov, B. A.** Field and pot experiments on the application of peat together with mineral fertilizers. *Trudy Inst. Torfa* 9, 1934 (42-44). *Pedology* 1935 (911).

**631.878—Henke, I.** Maintenance and increase of soil fertility by applying treated brown coal. *Braunkohle* 1935 (129, 150). Z.I.D. 41 (380).

**631.878 Kappen, H.; Beling, R. W.; Strünck, G.** The fertilizer effect of brown coal. *Ztschr. Pflanz. Düng.* 21, 1935 (215-229). G.

**631.878—Keese, H.** Further contributions to the problem of the effect of the humus manure "Huminal". *Gartenbauwiss.* 9, 1935 (466-478). *ForschDienst.* 1 (387). G.

**631.878 Lieske, R.; Winzer, K.** Cause of the fertilizing action of brown coal. *Brennstoff-Chem.* 16, 1935 (24-27). B.C.A. 54 (325). G.

**631.878 Logvinova, Z. V.** Effect of organo-mineral fertilizers prepared from peat. *Minn. Udob.* 5, 1935 (69-81). R.

**631.878—Verona, O.; Cirlotti, P.** The action of charcoal on vegetation. V. Animal charcoal. *Ist. Agrar. Pisa Boll.* 11, 1935 (401-420). C.A. 30 (6496).

**631.878—Berkner, F.** Raw brown coal as fertilizer. *Ztschr. Pflanz. Düng.* 44, 1936 (346-368). G.

**631.878—Gordon, M.** Peat and peat manures. *ForschDienst.* 1, 1936 (521-528). G.

**631.878—Ivanov, A. G.; Trushkina, N. I.** Brown coal as fertilizer. *Trudy Nauch. Inst. Udob.* No. 127, 1936 (98-131). R.G.

**631.878 Kharlamov, V.** High yields obtained by the use of peat on most graded sands of bottom lands lying near terraces in White Russia. *Khim. Setstal. Zemled.* No. 12, 1936 (40-43). R.

**631.878 Logvinova, Z. V.; Sannikova, N. M.** The effect of organo-mineral fertilizer made from peat on yield. *Trudy Nauch. Inst. Udob.* No. 127, 1936 (78-97). R.G.

**631.878—Ludmila, J.** The significance of humic materials from coal in fertilization. *Chem. Listy* 30, 1936 (6-9). C.A. 30 (3933).

**631.878 Popp, M.** Evaluation of humus manurial materials. *ForschDienst.* 1, 1936 (746-748). G.

**631.878 Wyatt, F. A.; Leahey, A.** Activated carbon as a fertilizer. *Sci. Agric.* 17, 1936 (1-10).

**631.878 Engels, O.** Humus manuring. *ForschDienst.* 4, 1937 (54-59). G.

**631.878—Jungermann, K.** The evaluation of organic matter and the plant physiological value of nutrients in Huminal-B and Nettolin. *Bodenk. Pflernähr.* 3, 1937 (254-265). G.

**631.878—Krása, T.** Use of brown coal preparations as fertilizing agents. *Brennstoff-Chem.* 18, 1937 (180-181). C.A. 31 (4761).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 631.878—Sauerlandt, W.** The investigation and evaluation of organic fertilizers. *Bodenk. PflErnähr.* 3, 1937 (219-239). [G.]
- 631.878—Sessous, G. ; Schell, H.** Manuring experiments with Nettolin in comparison with compost and stable manure. *Bodenk. PflErnähr.* 3, 1937 (239-254). [G.]
- 631.878—Springer, U.** Commercial humus fertilizers, a contribution to their investigation and evaluation. *Bodenk. PflErnähr.* 3, 1937 (139-188). [G.]
- 631.878 : 541.128—Andrés, J. A. ; Collado, G.** Catalytic effect of colloidal lignite. *Bot. Inst. Investig. Agron. Madrid* 2, 1935, pp. 17.
- 631.878 : 631.411.1—Gescher, N. v.** Use of peat for the improvement of sandy soil in Germany. *Mo. Bull. Agric. Sci. Pract.* 25, 1934 (494T-495T).
- 631.878 : 631.415.2—Schmitt, L.** The influence of Nettolin on the reaction of acid soils. *Deut. Landw. Pr.* 61, 1934 (531-532). C.A. 29 (1194). [G.]
- 631.878 : 631.43—Nikitskaia, N. P.** The effect of peat on the physical properties of sandy soil. *Trudy Inst. Torfa* 9, 1934 (44-52). *Pedology* 1935 (916).
- 631.878 : 631.43—Feustel, I. C. ; Byers, H. G.** The comparative moisture-absorbing and moisture-retaining capacities of peat and soil mixtures. *U.S.D.A. Tech. Bull.* 532, 1936, pp. 25.
- 631.878 : 631.43—Izmailovich, O. I.** The effect of ammonium humate on the physico-chemical properties of soil. *Trudy Nauch. Inst. Udob.* No. 127, 1936 (132-142). Rg.
- 631.878 : 631.43—Kabanov, B.** Influence of peat applications on the physical and physico-chemical properties of soils. *Trans. Soviet Sci. Int. Soc. Soil Sci.* Vol. 5, 1936 (288-296). [R.]
- 631.878 : 631.46—Kharitonova, L. P. ; Elina, M. Y.** Bio-chemical processes on peat treated soils. *Trudy Inst. Torfa* 9, 1934 (60-73). *Pedology* 1935 (920). R.
- 631.878 : 631.461.3—Davis, R. O. E. ; Miller, R. R. ; Scholl, W.** Nitrification of ammoniated peat and other nitrogen carriers. *J. Amer. Soc. Agron.* 27, 1935 (729-737).
- 631.878 : 631.812—Dragunov, S. S.** Technology of organic-mineral fertilizers. I. *Trudy Nauch. Inst. Udob.* 109, 1933 (41-48). B.C.A. 53 (1112).
- 631.878 : 631.812—Dragunov, S. S. ; Kiprianov, A. A. et al.** Humic fertilizers. II. Influence of ammonia and chlorine on the organic constituents of peat. *Zh. Prikl. Khim.* 7, 1934 (1055-1064). B.C.A. 54 (324). [R.]
- 631.878 : 631.812—Apushkin, K. K.** A study of the conditions of coagulation of humino-ammoniacal extracts and distribution of  $\text{NH}_3$  and  $\text{P}_2\text{O}_5$ . *Kolloid. Zh.* 1, No. 6, 1935 (495-506). *Pedology* 1937 (279).
- 631.878 : 631.812—Davis, R. O. E. ; Scholl, W. ; Miller, R. R.** A high-nitrogen material from urea-ammoniated peat. *Indust. Engng. Chem.* 27, 1935 (69-71). C.A. 29 (1567).
- 631.878 : 631.812—Dragunov, S. S.** New ways of use and production of organic-mineral fertilizers. *Trans. 4th Mendeleev Cong. Theoret. Appl. Chem.* 2, 1935 (54-61, 63-64). C.A. 30 (4971).

## FERTILIZERS AND GENERAL AGRONOMY

**631.878 : 631.812**—Howard, L. B.; Pinck, L. A.; Hilbert, G. E. Ammoniated peat—mechanism of formation of water soluble nitrogenous constituents. *Indust. Engng. Chem.* 27, 1935 (1508–1509). C.A. 30 (1492).

**631.878 : 631.812**—Pinck, L. A.; Howard, L. B.; Hilbert, G. E. Nitrogenous composition of ammoniated peat and related products. *Indust. Engng. Chem.* 27, 1935 (440–445).

**631.878 : 631.812**—Dragunov, S. S.; Rosnovskaja, A. N. The production of organo-mineral fertilizers from coal and Transcaucasian peat. *Trudy Nauch. Inst. Udob.* No. 127, 1936 (67–77). [R.e.]

**631.878 : 631.812**—Dragunov, S. S.; Zasedateleva, A. N. Ammonia treatment of coal and cellulose under pressure and with heating. *Trudy Nauch. Inst. Udob.* No. 127, 1936 (53–61). [R.g.]

**631.879.1 : 631.812**—Mieldazis, J. J. Organic manure from street refuse and night soil at Mysore City, India. *Indian Med. Gaz.* 49, 1934 (87–92). C.A. 29 (2646).

**631.879.1 : 631.812**—Rao, J. J.; Subrahmanyam, V. A hygienic method of composting refuse with night-soil. *Ind. Med. Gaz.* 70, 1935, pp. 15.

**631.879.1 : 631.812**—Gusev, S. P. A method for transforming faeces into "poudrette", and its use as a fertilizer. *Khim. Sotsial. Zemled.* No. 2–3, 1936 (27–43). [R.e.]

**631.879.1 : 631.812**—Subrahmanyam, V. Composting of town refuse by the "edelmist" process. *Indian Med. Gaz.* 71, 1936, pp. 5.

**631.879.2**—Shioiri, M.; Kobayashi, T. Availability of nitrogen in activated sludge. *J. Sci. Soil Japan* 9, 1935 (159–170). C.A. 29 (5970).

**631.879.2**—Stock, L. The use of sludge-peat mixtures as fertilizers. *Wasser u. Abwasser* 35, 1936 (53–54). C.A. 31 (4040). [G.]

**631.879.2**—Popp, M. Manurial value of sewage sludge. *Forsch.-Dienst.* 3, 1937 (129–138). [G.]

**631.879.2**—Subrahmanyam, V. Sewage as a source of nitrogen supply to the soil. *Proc. Nat. Inst. Sci. India* 3, 1937 (197–211).

**631.879.2 : 553.97**—Krnat'lan, T. S.; Rozanov, N. S. Agrochemical characterization of the processes involved when peat in situ is composted with night soil. *Khim. Sotsial. Zemled.* No. 6, 1936 (47–55). [R.]

## 631.89 MIXED AND COMPOUND FERTILIZERS

**631.893**—Butkevich, V. V. The application of combined fertilizers. *Trans. Int. Soc. Soil Sci. Soviet Sect. 4th Comm.* 1933 (210–211).

**631.893**—Scheffer, F. Measures for the upkeep and increase of soil fertility. *Kuhn.-Arch.* 38, 1933 (96–100). [G.]

**631.893**—Engels, O. Mixed fertilizers in the light of theory and practice. *Chem. Ztg.* 58, 1934 (422). Z.P.D. 38 (173). [G.]

**631.893**—Antoshin, S. T. Foreign experimental data with compound fertilizers with an ammonium phosphate basis. *Trudy Nauch. Inst. Udob.* 126, 1935 (154–184).

**631.893**—Kodama, S.; Kidokoro, K.; Harada, T. On the fertilizing value of the new compound fertilizers. Mizuhokasei and

## BIBLIOGRAPHY OF SOIL SCIENCE

- Mikunikasei (manufactured by Dai Nippon Jinzohiryo Co. Ltd.)  
11. *J. Sci. Soil Japan* 9, 1935 (313-319). [J.]
- 631.893—Korolev, L. I. Field experiments with triple compound fertilizers. *Trudy Nauch. Inst. Udob.* 126, 1935 (22-32).
- 631.893—Sokolov, A. V.; Volkova, V. V. Experiments with triple fertilizers. *Trudy Nauch. Inst. Udob.* 126, 1935 (5-11). [R.g.]
- 631.893—Sokolov, A. V.; Volkova, V. V. Experiments with different amounts of nitrophoska and ammophos. *Trudy Nauch. Inst. Udob.* 126, 1935 (11-15). [R.g.]
- 631.893—Sokolov, A. V.; Volkova, V. V. Comparison of a triple concentrated fertilizer with an equivalent mixture of simple fertilizers at different soil moistures. *Trudy Nauch. Inst. Udob.* 126, 1935 (18-22).
- 631.893—Keenen, F. G.; Morgan, W. A. Rate of dolomite reactions in mixed fertilizers. *Indust. Engng. Chem.* 29, 1937 (197-201).
- 631.893.12—Keller, F. Fertiliser investigations with Nitrophosphat-Lonza. *Landw. Jahrb. Schweiz.* 84, 1934 (898-904). [G.]
- 631.893.12—Druzhinin, G. S. Results of field experiments with diamphosphos, leunaphos and ammophos. *Trudy Nauch. Inst. Udob.* 126, 1935 (49-55). [R.g.]
- 631.893.12—Druzhinin, G. S. Results of field experiments with nitrophos in 1933. *Trudy Nauch. Inst. Udob.* 126, 1935 (66-71). [R.g.]
- 631.893.12—Obolenskaia, L. I. Nitrogenous-phosphatic fertilizers. Pot experiments with ammophos and diamphosphos. *Trudy Nauch. Inst. Udob.* 126, 1935 (33-40). [R.g.]
- 631.893.12—Turchin, F. V. Comparative effectiveness of ammonitrophos. *Miner. Udob.* 1, 1935 (41-49). C.A. 29 (7555).
- 631.893.12—Turchin, F. V. Results of agrochemical investigations with ammonitrophos. *Trudy Nauch. Inst. Udob.* 126, 1935 (55-66). [R.g.]
- 631.893.12—Turchin, F. V. The effectiveness of nitrophosphate fertilizers obtained by nitric acid extraction of crude phosphates. *Zh. Khim. Prom.* 13, 1936 (1141-1147). C. A. 31 (497).
- 631.893.123—Engels, O. Comparative fertilizer tests of the effect of Nitrophoska II and single nutrients, especially nitrogen. *Kartoffelbau* 17, 1933 (123). Z.P.D. 1311 (468).
- 631.893.123—Blanck, E.; Heukeshoven, W. Pot experiments on the phosphate effect of the new complete fertilizer Nitrophoska (lime containing) in comparison with other phosphate fertilizers. *J. Landw.* 82, 1934 (307-316). [G.]
- 631.893.123—Engels, O. Fertilizing with Nitrophoska. *Kunst-dünger* 31, 1934 (3-7, 34-40, 67-69, 95-98). [G.]
- 631.893.123—Heinrich, W. Experiments and experiences with Nitrophoska. *Wiener Landw. Ztg.* 84, 1934 (54). Z.P.D. 37 (125). [G.]
- 631.893.123—Blanck, E.; Heukeshoven, W. The most suitable nutrient ratio in (lime-containing) Nitrophoska. *J. Landw.* 83, 1935 (203-218). [G.]
- 631.893.123—Blanck, E.; Schorstein, H. The most suitable nutrient ratio in lime-containing Nitrophoska. *J. Landw.* 83, 1935 (327-333). [G.]
- 631.893.123—Løve, P. J. Trials with Nitrophoska. *Meld Stat Forøsksgård. Voll.* 1935 (11-87 109). *Herb. Abs.* 6 (56).

## FERTILIZERS AND GENERAL AGRONOMY

**631.893.123**—Sokolov, A. V.; Volkova, V. V. Comparison of Nitrophoska red III and green A with mixtures of simple fertilizers. *Trudy Nauch. Inst. Udob.* 126, 1935 (15-18). [R.g.]

**631.893.123**—Kirste, A. Under what conditions is Nitrophoska containing lime suitable as a fertilizer? *Deut. Landw. Pr.* 63, 1936 (230).

**631.893.123**—Rackmann, K. The relations between plant growth, soil and nutrient status in fertilizing. III. *Ztschr. Pflanz. Dung.* 44, 1936 (307-309). [G.]

**631.893.123**—Rackmann, K. The relations between plant growth, soil and nutrients in fertilizing II. *Ztschr. Pflanz. Dung.* 41, 1936 (313-335). [G.]

**631.893.124**—Geuer. The new nitrogen-phosphoric acid fertilizer, "Stickstoffkalkphosphat", in practical use. *Kunstdünger* 33, 1936 (315-316). C.A. 31 (5091).

**631.893.13**—Sokolov, A. V. Possible uses for potazote. *Miner. Udob.* 3, 1935 (49-55). [R.]

## 632 PLANT DISEASES. PLANT PROTECTION

**632**—Dufrénoy. Soil treatment, disinfection and manuring as methods of control for parasitic and deficiency diseases affecting crop plants. *Landw. Jahrb. Schweiz* No. 7, 1936 (679-728). [F.]

**632 : 550.35**—Gäumann, E. On the plant pathological effect of earth rays. *Phytopath. Ztschr.* 8, 1935 (182-196). [G.]

**632 : 550.35**—Gäumann, E. The plant pathogen action of earth rays. *Phytopath. Ztschr.* 9, 1936 (325-336). [G.]

**632 : 631.811**—Sereni, D. The influence of mineral nutrients on the resistance of plants against diseases. *Hassadch* 15, 1935 (249-251). [Hb.]

**632 : 631.811**—Nath, B. V. Disease resistance in plants in relation to nutrition balance. *Proc. Indian Acad. Sci.* 3B, 1936 (459-469).

**632 : 631.875**—Gadd, C. H. Compost and disease. *Tea Quart.* 10, 1937 (93-100).

**632.111**—Fleischmann, R. Soil freezing. *Broklm. Beibl. Met. Ztschr.* 2, 1935 (88-90). *Med. Zbl.* 65 (377).

**632.111**—Sergeev, I. I.; Lebedev, A. M.; Akif'eva, A. A. Correlation of frost resistance and resistance to soil salination. *C.R. Acad. Sci. (U.S.S.R.)* 4 (n.s.), 1935 (157-160). C.A. 30 (3145).

**632.111**—Gilcher, J. Minimizing frost injury. *Deut. Landw. Pr.* 64, 1937 (63-64). [G.]

**632.111 : 631.432.2**—Platt, A. W. The effect of soil moisture, hardening, endosperm condition and variety on the frost reaction of wheat, oat and barley seedlings. *Sci. Agric.* 17, 1937 (616-626).

**632.111 : 631.81**—Sablinskaia-Ivanova, B. I. The effect of mineral fertilizers on winter hardiness of winter wheat. *Bull. Appl. Bot. Leningrad Ser. A*, No. 16, 1935 (37-53). [R.] *Khim. Sotsial. Zemled.* Nos. 9-10, 1935 (95-103). [R.g.]

**632.111 : 631.81**—Wilhelm, A. F. Cold-resistance of winter-hard crop plants with special reference to the influence of varied mineral nutrition and of the nitrogen metabolism. *Phytopath. Ztschr.* 8, 1935 (111-156). *Herb. Abs.* 6 (205). B.C.A. 54 (1061). [G.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- 632.111 : 631.81—Wilhelm, A. F.** Behaviour of so-called non-hardy crop plants at low temperatures, with special reference to the influence of mineral nutrition and of nitrogen metabolism. *Phytopath. Ztschr.* 8, 1935 (337-362). *Herb. Abs.* 6 (206). B.C.A. 55 (467). [G.]
- 632.111 : 631.81—Yukhimchuk, F. F.** Manuring as a factor increasing the winter resistance of winter cereals. *Khm. Sotsial. Zemled.* Nos. 11-12, 1935 (103-108). [R.g.]
- 632.111 : 631.83—Fuchs, W. H.** Why do liberal applications of potash increase the resistance of plants to cold? *Ernähr. Pflanze* 31, 1935 (233-234).
- 632.111 : 631.83—Stoklasa, J.** The increase of physiological combustion in the presence of potassium and phosphorus in the cells and the prevention of freezing of the plant. *Ernähr. Pflanze* 32, 1936 (37-31). [G.]
- 632.111 : 631.83—Wilhelm, A. F.** Studies relating to the importance of lipids, particularly of phosphatides, to the frost resistance of crops. *Phytopath. Ztschr.* 8, 1935 (225). *Superphosphate* 9 (18). [G.]
- 632.112 : 546.27—Bous, F.** Damage caused by drought and its control. *Wbl. Landesbauernsch. Bayern* 124, 1934 (1087-1088). *Herb. Abs.* 5 (41).
- 632.112 : 631.432.2—Ellis, J. H. ; Shafer, W. H. ; Caldwell, O. G.** The recent drought situation in south-western Manitoba. *Sci. Agric.* 16, 1936 (478-488).
- 632.112 : 631.81—Scholz, W.** Can periods of drought be controlled by manurial practice? *Ztschr. Pflanz. Düng.* 37, 1935 (73-83). [G.]
- 632.183 : 631.83—Mirtsch, H.** Stem rigidity tests with different plants and different rates of application of potash fertilizers. *PflBau. PflSchutz* 1933 (209). *Z.P.D.* 37 (126). [G.]
- 632.183 : 631.83—Alten, F. ; Goeze, G.** Investigations on the influence of potash manuring on the anatomical structure of the stalks of oats and barley plants. *Ernähr. Pflanze* 31, 1935 (181-192). [G.e.]
- 632.183 : 631.83—Ulbricht, H.** The influence of potash fertilizers on the anatomic structure of rye straw (with and without lime). *Ernähr. Pflanze* 33, 1937 (28-32). [G.e.sp.]
- 632.184—Wieler, A.** The soil-disturbing effect of acids from smoke. *Angew. Bot.* 15, 1933 (419-433). *E.S.R.* 72 (490). [G.]
- 632.184—Deuber, C. G.** Effect on trees of illuminating gas in the soil. *Plant Physiol.* 11, 1936 (401-412). B.C.A. 56 (70).
- 632.184—Herman, L. ; Herman-Montagne, R.** Significance of measuring the quantity of dust or smoke falling on the soil. *C.R.* 204, 1937 (1441-1443). [F.]
- 632.19—Clarté, R.** Three soil maladies and their repercussion on certain plants in the Netherlands. *J. Agric. Prat.* 100, 1936 (178-180). [F.]
- 632.19—Ferdinandsen, C. ; Buchwald, N. F.** Physiogenic plant diseases. II. Chemoses. *K. Vet. Højsk.* 1936, pp. 214. R.A.M. 16 (626).
- 632.19 : 546.27—Fertilizer, Feeding Stuffs and Farm Supplies Journal.** Boron and plant life. *Fert. Feed. J.* 21, 1936 (4-6, 8, 60-64).

# FERTILIZERS AND GENERAL AGRONOMY

**632.19:546.27—Brenchley, W. E.** Boron and the control of plant disease. *Nature* 139, 1937 (536-537).

**632:546.34—Wortley, W. R. S.** The effect of salts of lithium on the resistance of certain plants to disease. *J. Roy. Agric. Soc. England* 97, 1936 (492-498). C.A. 31 (6797).

**632.19:546.56—Sjollema, B.** Copper deficiency as the cause of disease in plants and animals. *Biochem. Ztschr.* 267, 1933 (151-156). *Bied. Zbl.* 6 (224). [G.]

**632.19:546.56—Brandenburg, E.** On the importance of copper in the development of certain plants in comparison with boron and manganese and on copper deficiency plantations. *Angew. Bot.* 16, 1934 (505-509). R.A.M. 14 (256).

**632.19:546.56—Rademacher, B.** Pathological symptoms and reaction of the various cultivated plants on reclamation-diseased soils. *Deut. Landw. Pr.* 61, 1934 (581-593). R.A.M. 14 (254-255). G.

**632.19:546.56—Rademacher, B.** Soil sickness. *Biol. Reichsanst. Flugbl.* No. 137, 1935, pp. 4. *Herb. Abs.* 5 (201).

**632.19:546.56—Rademacher, B.** The control of reclamation disease. *Mitt. Landw.* 50, 1935 (791-792). J.H.B. 4 (345). G.

**632.19:546.56—Rademacher, B.** Soil sickness as a phenomenon of copper deficiency, and the conclusions for crop and cattle farming arising therefrom. *Deut. Landeshztg.* 4A, No. 4, 1935 (3-7). *Herb. Abs.* 5 (290). [G.]

**632.19:546.56—Vieschlag, F.** The control of reclamation disease. *Deut. Landeshztg.* 4, 1935 (14). Z.P.D. 43 (233). [G.]

**632.19:546.56—Rademacher, B.** The heath moor disease (reclamation disease) with special reference to the copper problem. *Arch. Biol. Reichsanst. Land-u. Forstw.* 21, 1936 (531-603). [G.]

**632.19:546.56—Rademacher, B.; Glaeser, H.** The control of "reclamation disease" on copper-deficient soils by the use of low-grade copper ores and residues. *Metall u. Erz* 34, 1937 (402-405). C.A.S.B. 4 (3)

**632.19:631.432.4—Arnd, T.; Segeberg, H.** The moisture combining capacity of peat and its relation to the so-called soil sickness (reclamation disease, etc.). *Ztschr. Pflanz. Diagn.* 43, 1936 (134-142). G.

**632.19:631.458—Bewley, W. F.** Twenty-one years glasshouse research at Cheshunt. *Sci. Hort.* 4, 1936 (114-125).

**632.19:631.811.3—American Cyanamid Company.** Potassium deficiency symptoms and nitrogen-potassium and calcium-potassium relationships. *Amer. Cyanamid Co. Agric. Div. Bull.* 66, 1934, pp. 12.

**632.19:631.811.3—Klinkowski, M.** A contribution to the knowledge and diagnosis of non-parasitic diseases of agricultural crops, with special reference to symptoms of potash starvation. *Ernähr. Pflanze* 31, 1935 (22-29). -

**632.19:631.811.6—Cooper, H. P.** Nutrient-deficiency symptoms in certain plants. *Proc. Assoc. S. Agric. Workers* 34th, 35th, 36th Ann. Conv. 1933 35 (80-81). C.A. 30 (2685).

**632.19:631.811.6—Carolus, R. L.** The relation of potassium, calcium and sodium to magnesium deficiency. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (595-599).



# BIBLIOGRAPHY OF SOIL SCIENCE

- 632.19 : 631.811.6**—Itallie, T. B. v. The "Hooghalensche" disease and the composition of cereals. *Landbouwk. Tijdschr.* 48, 1936 (125-142). [Dut.]
- 632.19 : 631.811.9**—Gram, E. Deficiency disease experiments. *Tidsskr. Planteavl* 41, 1936 (401-449). [Dane.]
- 632.19 : 631.811.9**—Brenchley, W. E. Some deficiency diseases of crop plants. *J. Min. Agric.* 44, 1937 (116-122).
- 632.19 : 631.811.9**—Dufrénoy, J. Deficiency diseases of plants. *Cong. Int. Tech. Chim. Indust. Agric. 5th Cong. Holland* 1, 1937 (468-476). B.C.A. 56 (958).
- 632.191 : 546.72**—Scholz, W. Chlorosis of *Lupinus angustifolius* and *Ornithopus sativus* in its relation to iron and manganese. *Ztschr. Pflanz. Dung.* 35A, 1934 (88-101). *Herb. Abs.* (541). [G.]
- 632.191 : 546.72**—Olsen, C. Iron absorption and chlorosis in green plants. *C.R. Trav. Lab. Carlsberg Ser. Chim.* 21, No. 3, 1935 (15-52). [E.]
- 632.191 : 546.72**—Roach, W. A.; Levy, B. F. G. Iron shortage chlorosis in the plantation. *E. Mallng Res. Sta. 24th Ann. Rept.* 1937 (153-159).
- 632.191 : 631.415.1**—Luchetti, G. Plant chlorosis in relation to the pH of soils. *Ist. Agrar. Pisa Boll.* 10, 1934 (199-220). C.A. 29 (4120). [I.]
- 632.191 : 631.415.1**—Luchetti, G. Further experiments on the relation between the reaction of soils and the chlorosis of plants. *Ist. Agrar. Pisa Boll.* 11, 1935 (1-9). C.A. 30 (6486). [I.]
- 632.191 : 631.415.3**—Luchetti, G. Theory and practice of alkaline chlorosis. *Ital. Agric.* 74, 1937 (33-38). [I.]
- 632.2**—Watson, J. R.; Goff, C. G. Control of root-knot in Florida. *Fla. Agric. Expt. Sta. Bull.* 311, 1937, p. 22.
- 632.2 : 631.417**—Marchant, E. N. J. The estimated number of nemas in the soils of Manitoba. *Canad. J. Res.* 11, 1934 (594-601).
- 632.2 : 631.436**—Wilson, J. D. Root-knot nematode in muck soils with reference to soil temperatures and various treatments. *Ohio Agric. Expt. Sta. Bmo. Bull.* 178, 1936 (21-25). C.A. 30 (3573).
- 632.2 : 631.436**—Townsend, G. R. Development of the root-knot nematode on beans as affected by soil temperature. *Fla. Agric. Expt. Sta. Bull.* 309, 1937, pp. 15.
- 632.2 : 631.51**—Le Roux, J. G.; Stoffberg, F. J. Cultural methods for the control of the root-knot nematode. *Farm. S. Africa* 10, 1935 (150-154).
- 632.2 : 631.81**—Lüdecke, H. How does manuring affect the number of nematode cysts present in soils? *Ernähr. Pflanze* 33, 1937 (253-261). [Gesp.]
- 632.4**—Garrett, S. D. The soil-borne fungus diseases of field and plantation crops. *Emp. J. Expt. Agric.* 5, 1937 (189-196).
- 632.4 : 631.415.1**—Glynne, M. D. Incidence of "take-all" on wheat and barley on experimental plots at Woburn. *Ann. Appl. Biol.* 22, 1935 (225-235). B.C.A. 54 (821).
- 632.4 : 631.415.1**—Potts, G. Finger-and-toe disease (*Plasmodiophora brassicae*). *Trans. Brit. Mycol. Soc.* 19, 1935 (114-127). B.C.A. 54 (919).
- 632.4 : 631.461**—Novogrudsky, D. Utilization of microbes for the control of fungal diseases of crops. *Bull. Acad. Sci. (U.S.S.R) (Cl. Sci. Math.) Biol. Ser.* No. 1, 1936 (277-293). [R.e.]

## FERTILIZERS AND GENERAL AGRONOMY

**632.4 : 631.58—Foex, E.** Control of parasitic injuries of crop plants by rational cultural methods (rotations and cultivation). *Landw. Jahrb. Schweiz* No. 7, 1936 (668-678). [F.]

**632.4 : 631.81—Schlicher, E.** Contribution to the rust problem. *Ztschr. PflKrank. PflSchutz.* 43, 1933 (533-563). *Biol. Abs.* 9 (286). [G.]

**632.4 : 631.811 Lowig, E.** Further investigations on the relationship between resistance to mildew and nutrition. *Ernähr. Pflanze* 32, 1936 (61-67). [G.e.]

**632.4 : 631.83—Lowig, E.** The effect of potash salts, especially their anions, silicic acid, and nitrogen on the resistance of cereals and fodder plants to mildew. *Landw. Jahrb.* 81, 1935 (273-335). [G.]

**632.51—Korsmo, E.** Investigations of the weed seed content in grain siftings, chaff, hayfield sweepings, manure and arable soils. *Meld. Norges LandbrHush.* 51, 1935 (1) Z.P.D. 41 (102). [N.]

**632.51—Saunders, A. R.; Laubscher, F. X.** Weed control on arable land. *Farm. S. Africa* 12, 1937 (319-320, 324).

**632.51 : 631.415.1—Brenchley, W. E.** The weed flora in its relation to crop and agricultural treatment. *Proc. 6th Int. Bot. Cong. Amsterdam* 2, 1935 (5-7).

**632.51 : 631.415.1—Schmalfuss, K.** Weed flora and soil reaction. *Angew. Bot.* 17, 1935 (191). [G.]

**632.51 : 631.415.1—Volkart, A.** The weed flora in its relation to the dispersion and reaction of arable soil. *Proc. 6th Int. Bot. Cong. Amsterdam* 1, 1936 (146); 2, 1935 (7-8).

**632.51 : 631.421—Lynes, F. F.** Statistical analyses applied to research in weed eradication. *J. Amer. Soc. Agron.* 27, 1935 (980-987).

**632.51 : 631.58—Singh, B. N.; Das, K.; Chalam, G. V.** The effectiveness of cultural treatment in the control of grass weeds. *Imp. J. Expt. Agric.* 5, 1937 (63-68).

**632.51 : 631.581—Brenchley, W. E.; Warington, K.** The weed seed population of arable soil. III. The re-establishment of weed species after reduction by fallowing. *J. Ecol.* 24, 1936 (479-500).

**632.51 : 631.589—Krasulin, V. P.** Stubble burning as a method of weed control. *Khm. Sotsial. Zemled.* Nos. 11-12, 1935 (120-124). [R.g.]

**632.51 : 631.81—Weigert, J.; Weizel, H.** The effect of different commercial fertilizers upon the shooting of weed seeds. *Prakt. Bl. Pflanz.* 14, 1936 (129-139). *Herb. Abs.* 6 (407).

**632.51 : 631.811—Braun, H.** Why control weeds? *Mitt. Landw.* 49, 1934 (401). Z.P.D. 38 (190). [G.]

**632.51 : 631.821.1—Kott, S.** The effect of liming fields on weeds. *Khm. Sotsial. Zemled.* 3, 1934 (60-67). *Bied. Zbl.* 6 (260).

**632.51 : 631.833.3—Demela, J.; Brada, L.** The destruction of weeds in meadows with finely ground kainite. *Ernähr. Pflanze* 32, 1936 (105-108).

**632.51 : 631.86—Watt, W. L.** Control of striga weed in Nyanza Province, Kenya. *E. Afric. J.* 1, 1936 (320-322).

**632.536—Cox, H. R.** Eradication of ferns from pasture lands in the Eastern United States. *U.S.D.A. Farm. Bull.* 687, 1936, pp. 8.

# BIBLIOGRAPHY OF SOIL SCIENCE

- 632.536—Braid, K. W.** The bracken eradication problem. *Agric. Prog.* 14, 1937 (29-39).
- 632.575.7—Hanson, H. C.** Leafy spurge. *N. Dak. Agric. Expt. Sta. Circ.* 55, 1934, pp. 5. *Herb. Abs.* 5 (43).
- 632.575.7 : 631.415.1—Mukherji, S. K.** The autoecology of *Mercurialis perennis* L. IV. Effect of soil factors on distribution and growth. *J. Ecol.* 24, 1936 (317-333). *C.A.* 31 (1143).
- 632.575.7 : 631.415.1—Simpson, J. F. Hope.** Precise distribution of *Mercurialis perennis* according to soil hydrogen ion concentration. *Nature* 139, 1937 (632-633).
- 632.575.7 : 632.954—Barnett, H. L. ; Hanson, H. C.** Control of leafy spurge and review of literature on chemical weed control. *N. Dak. Agric. Expt. Sta. Bull.* 277, 1934 (32). *Herb. Abs.* 5 (43).
- 632.587.56—Leemann, A. C.** The eradication of Gifblaar (*Dichapetalum Cymosum*). *S. Africa Dept. Agric. Bull.* 153, 1935, pp. 14.
- 632.587.56—Bramley, C.** Gifblaar control. *Farm. Weekly S. Africa* 53, 1937 (1039).
- 632.588.6 : 631.415.1—Brenchley, W. E. ; Heintze, S. G.** Colonization by *Epilobium angustifolium*. *J. Ecol.* 21, 1933 (101-102).
- 632.591.24 : 631.841.5—Bruckner, E. ; Bujakowsky, W.** Combating of heather in coniferous stands with anoleid calcium cyanamide and Hederich-Kainite (pulverized kainite). *Forstarchiv* 12, No. 8, 1936 (121-125). *C.M.R.* 1936 (No. 380).
- 632.591.6—Timson, S. D.** Witchweed. *Rhod. Agric. J.* 31, 1934 (792-801). *Herb. Abs.* 5 (43).
- 632.591.6—Timson, S. D.** Notes on witchweed control. *Rhod. Agric. J.* 32, 1935 (780-791).
- 632.591.6—Rhodesia Agricultural Journal.** Successful control of witchweed. *Rhod. Agric. J.* 33, 1936 (887-893).
- 632.591.6—Timson, S. D.** A note on witchweed control. *Rhod. Agric. J.* 33, 1936 (930-931).
- 632.591.6 : 631.58—Farmer's Weekly.** Witchweed control. *Farm. Weekly S. Africa* 52, 1937 (1668).
- 632.594.2—Kiesselbach, T. A. ; Petersen, N. F. ; Burr, W. W.** Bindweeds and their control. *Neb. Agric. Expt. Sta. Bull.* 287, 1934, pp. 47. *E.S.R.* 72 (45).
- 632.594.2—Zahnley, J. W. ; Pickett, W. F.** Field bindweed and methods of control. *Kans. Agric. Expt. Sta. Bull.* 269, 1934, pp. 26. *Herb. Abs.* 7 (86).
- 632.594.2—Franzke, C. J. ; Hume, A. N.** Field bindweed. *S. Dak. Agric. Expt. Sta. Bull.* 305, 1936, pp. 51.
- 632.594.2 : 632.954.8—Kinch, R. C. ; Keim, F. D.** Eradication of bindweed in bluegrass lawns. *J. Amer. Soc. Agron.* 29, 1937 (30-39).
- 632.597—Cooley, L. M.** Wild bramble eradication. *N.Y. St. Agric. Expt. Sta. Bull.* 674, 1936, pp. 32. *E.S.R.* 76 (352).
- 632.599.8—Mehl, J.** *Cirsium oleraceum* as a meadow weed, prevention of its spreading, and control measures. *Landw. Fachpr. Tschech.* 12, 1934 (273-274). *Herb. Abs.* 5 (44). *G.*
- 632.599.8—Olsson, A.** Preventive measures against thistles. *Landtmannen* 20, 1936 (246-247). *Herb. Abs.* 7 (87).

# FERTILIZERS AND GENERAL AGRONOMY

- 632.599.8 : 632.954**—**Kus'menko, N. L.**—Chloropicrin as a method of control of *Centaurea picris*. *Khim. Sotsial. Zemled.* Nos. 7-8, 1936 (171-172). [R.]
- 632.651.6**—**Lele, S. L.** Destruction of earthworms. *Poona Agric. Coll. Mag.* 26, 1934 (112-113). C.A. 29 (1572).
- 632.651.6**—**Dawson, R. B. ; Ferro, R. B.** Earthworm control without the aid of water. *J. Bd. Greenh. Res.* 4, 1935 (58-72). C.A. 30 (219).
- 632.7 : 631.432.2**—**Andrewartha, H. G.** Thrips investigation. 5. On the effect of soil moisture on the viability of pupal stages of Thrips imaginis Bagnall. *Aust. J. Coun. Sci. Ind. Res.* 7, 1934 (239-244).
- 632.7 : 631.432.2**—**Chapman, A. J. ; Cavitt, H. S.** The influence of soil moisture upon survival of the pink bollworm. *J. Econ. Ent.* 27, 1934 (820-827). E.S.R. 72 (80).
- 632.7 : 631.432.2**—**Davidson, J.** Climate in relation to insect ecology in Australia. 2. Mean monthly temperature and precipitation-evaporation ratio. *Trans. Roy. Soc. S. Aust.* 59, 1935 (107-112).
- 632.7 : 631.434**—**Watts, J. G.** A study of the biology of the flower thrips *Frankliniella* (Fitch) with special reference to cotton. *S.C. Agric. Expt. Sta. Bull.* 306, 1936, pp. 46.
- 632.7 : 631.434**—**Welsch, I.** The mass distribution of the plum scale insect (*Eulecanium corni* 'Bouché, March) and its causes. *Landw. Jahrb.* 84, 1937 (431-492). [G.]
- 632.7 : 631.44**—**Buxton, P. A.** Studies on soils in relation to the biology of *Glossinia submorsitans* and *Tachinoides* in the North of Nigeria. *Bull. Ent. Res.* 27, 1936 (281-286).
- 632.7 : 631.44**—**Lucker, J. T.** Extent of vertical migration of horse strongyle larvae in soils of different types. *J. Agric. Res.* 52, 1936 (353-361).
- 632.7 : 631.81**—**Reid, W. J.** Relation of fertilizers to seed-corn maggot injury to spinach seedlings. *J. Econ. Ent.* 29, 1936 (973-980). C.A. 31 (1143).
- 632.7 : 631.83**—**Schwerdfeger, F.** Researches into the value of potassic manures for the control of Cockchafer (*Melolontha melolontha* and *M. lippocastani* F.). *Ztschr. Forst-u-Jagd.* 68, 4, 1936 (177-209). C.M.R. (No. 280).
- 632.7 : 631.833.3**—**Blattny, C.** The use of commercial fertilizers as a means of controlling the cockchafer pest. *Ernähr. Pflanze* 32, 1936 (333). G.c.
- 632.7 : 631.833.3**—**Subklew, W.** Researches on cockchafer control by means of manuring with kainite. *Anzeiger Schädlingsk.* 12, No. 6, 1936 (65). C.M.R. 1936 (No. 685).
- 632.7 : 632.951**—**Fleming, W. E. ; Baker, F. E.** The use of naphthalene against the Japanese beetle. *U.S.D.A. Tech. Bull.* 427, 1934, pp. 28. E.S.R. 72 (231).
- 632.7 : 632.951.23**—**Dawson, R. B. ; Ferro, R. B.** Investigations on the control of leather jackets. (1) The use of lead arsenate. *J. Bd. Greenh. Res.* 4, 1936 (239-261).
- 632.7 : 632.951.23**—**Fleming, W. E. ; Baker, F. E.** The effectiveness of various arsenicals in destroying larvae of the Japanese beetle in Sassafras sandy loam. *J. Agric. Res.* 52, 1936 (493-503).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 632.7 : 632.951.23**—Fleming, W. E.; Baker, F. E.; Koblit-sky, L. The insecticidal action of acid lead arsenate on the larvae of the Japanese beetle in different types of soil. *J. Agric. Res.* 53, 1936 (771-779).
- 632.765 : 631.42.005**—Jones, E. W. Practical field methods of sampling soil for wireworms. *J. Agric. Res.* 54, 1937 (123-134).
- 632.765 : 631.44**—Gui, H. L. Soil types as factors in wire-worm distribution. *Amer. Potato J.* 12, 1935 (108-113). *Biol. Abs.* 10 (1496).
- 632.765 : 631.83**—Subklew, W. The immediate position of wireworm control. *Mitt. D.L.G.* 24, 1933, pp. 2. *Zbl. Bakt.* 90 (373).
- 632.765 : 631.83**—Subklew, W. Further investigations on the control of wireworms by applications of potash salts. *Ernähr. Pflanze* 31, 1935 (381-383).
- 632.8 : 631.84**—Spencer, E. L. The influence of nitrogen fertilizing on the susceptibility of plants to virus infection. *Phytopath.* 25, 1935 (178). *Z.P.D.* 41 (364).
- 632.951.23**—Griffiths, E.; Morgan, W. L. *et al.* Arsenicals in agriculture. *J. Aust. Inst. Agric. Sci.* 3, 1937 (84-85). C.A.S.B. 4 (2).
- 632.953**—Godfrey, G. H.; Oliveira, J.; Hoshino, H. M. Increased efficiency of chloropicrin for nematode control with better confinement of the gas. *Phytopath.* 24, 1934 (1332-1346).
- 632.953**—MacLeod, D. J. Soil treatment in the control of certain soil-borne diseases. *Canada, Dominion Lab. Plant Path. Fredrickton N.B.*, pp. 22. (Mimeo).
- 632.953**—Rolet, A. The copper sulphate that falls on vineyard soils. *Vie Agric. Rur.* 23, 1934 (345-346). R.A.M. 14 (244).
- 632.953**—Bell, R. H. Chemical sterilization as a means of eradicating wart disease from the soil. *J. Econ. Ent.* 28, 1935 519-524). B.C.A. 54 (968).
- 632.953**—Berezova, E. F.; Gorbunova, A. P.; Kozlova, Z. I. Chloropicrin as a factor in raising the yield of flax. *Khim. Sotsial. Zemled.* No. 8, 1935 (59-70). [R.g.]
- 632.953**—Fron; Monchot. Influence of certain derivatives of quinaline on plants. *C.R.* 200, 1935 (485-487). [F.]
- 632.953**—Godfrey, G. H. Experiments on the control of the root-knot nematode in the field with chloropicrin and other chemicals. *Phytopath.* 25, 1935 (67-90).
- 632.953**—Gorbunova, A. P.; Kozlova, Z. I.; Berezova, E. F. Chloropicrin as a factor of increased yields. *Trudy VNIIL (Flax Inst)*, No. 1, 1935 (301-354). *Pedology*, 1937 (117). R
- 632.953**—Shchepetilnikova, A. M.; Vorob'eva, M. N.; Listvin, K. S. Chloropicrin as a means of improving the health and nutrient regime of soils. *Trudy VNIIL (Flax Inst)*, No. 1, 1935 (355-580). *Pedology*, 1937 (116).
- 632.953**—Daines, R. H. Fungicidal action of mercury in soils. *Phytopath.* 26, 1936 (90). B.C.A. 56 (1107).
- 632.953**—Doran, W. L. Vinegar as a soil disinfectant. *Science*, 84, 1936 (273-274).
- 632.953**—Godfrey, G. H. Control of soil fungi by soil fumiga-tion with chloropicrin. *Phytopath.* 26, 1936 (246-256). C.A. 30 (3935).

## FERTILIZERS AND GENERAL AGRONOMY

- 632.953**—Mishustin, E. N. Mechanism of the action of volatile antiseptics in the soil. *Mikrobiologia*, 5, 1936 (194-216). [R.]
- 632.953**—Brett, C. C.; Dillon Weston, W. A. R.; Boeer, J. R. Soil disinfection. III. Experiments on the germination of peas. Seed protection by the use of disinfectant dusts containing mercury. *J. Agric. Sci.* 27, 1937 (53-66).
- 632.953**—Newton, W.; Boshier, J. E.; Hastings, R. J. The treatment of glasshouse soils with chloropicrin for the control of *Heterodera marioni* (Cornu) Goodey, and other soil pathogens. *Canad. J. Res.* 15, 1937 (182-186).
- 632.953 : 546.212**—Dominik, W. Heavy water. *Rocz. Nnak Roln.* 33, 1934 (359-370). C.A. 29 (1029). [Pl.g.]
- 632.953 : 631.414.3**—Chigarev, G. A.; Melnikova, N. A. Sorption of chloropicrin by soils. *Trudy Gedroiz Inst. Udob. Leningr. Lab.* No. 36, 1935 (163-173).
- 632.953.005**—Neller, J. R.; Allison, R. V. A machine for the subsurface treatment of soils with chloropicrin and with carbon bisulfide for nematode control under field conditions. *Soil Sci.* 40, 1935 (173-177).
- 632.954**—Woodman, R. M. Weed killers. *Hort. Educ. Assoc. Yrbk.* 2, 1933 (77-83). C.A. 30 (226).
- 632.954**—Robbins, W. W. Weed investigations in California. *Calif. Dept. Agric. Mo. Bull.* 23, 1934 (307-312).
- 632.954**—Truninger, E.; Keller, F. Weed control experiments. *Landw. Jahrb. Schweiz* 48, 1934 (645). Z.P.D. 40 (124).
- 632.954**—Beaumont, A. B. Toxicity of several chemicals to a species of moss common to old pastures in the New England States. *J. Amer. Soc. Agron.* 27, 1935 (134-137).
- 632.954**—Crafts, A. S. Plot tests with sodium arsenite and sodium chlorate as soil sterilants in California. *Calif. Dept. Agric. Mo. Bull.* 24, 1935 (247-259). E.S.R. 74 (197).
- 632.954**—Crafts, A. S. The toxicity of sodium arsenite and sodium chlorate in four California soils. *Hilgardia*, 9, 1935 (461-498).
- 632.954**—Long, H. C.; MacDowall, R. K. Some chemical methods of weed destruction. *J. Roy. Agric. Soc. England*, 96, 1935 (22-44).
- 632.954**—Ostroumov, B. V.; Smagin, E. K. Chloropicrin as a weed killer and as a factor in increasing the yields of autumn sown wheat. *Khim. Sotsial. Zemled.* Nos. 11-12, 1935 (52-69). [R.]
- 632.954**—Tincker, M. A. H. Popular weed killers. *J. Roy. Hort. Soc.* 60, 1935 (68-79).
- 632.954**—Ball, W. S.; Crafts, A. S.; Madson, B. A., et al. Weed control. *Calif. Agric. Expt. Sta. Ext. Circ.* 97, 1936, pp. 87.
- 632.954**—Buckhardt, H. L. Effectiveness of furfural petroleum combinations in eradicating certain noxious weeds. *J. Amer. Soc. Agron.* 28, 1936 (437-442).
- 632.954**—Bulletin of the Imperial Institute. Some metallic and inorganic compounds used as weed-killers. *Bull. Imp. Inst.* 34, 1936 (189-211).
- 632.954**—Crafts, A. S.; Cleary, C. W. Toxicity of arsenic, borax, chlorate and their combinations in three California soils. *Hilgardia*, 10, 1936 (401-413).

# BIBLIOGRAPHY OF SOIL SCIENCE

632.954—Cook, W. H. Chemical weed killers. I. Relative toxicity of various chemicals to four annual weeds. *Canad. J. Res.* 15, 1937 (299-323).

632.954—Cook, W. H. Chemical weed killers. IV. Relative toxicities and loci of absorption of selected chemicals applied to perennials. *Canad. J. Res.* 15, 1937 (451-460).

632.954—Cook, W. H.; Halferdahl, A. C. Chemical weed killers. *Nat. Res. Council Canada Bull.* 18, 1937, pp. 111.

632.954—Cook, W. H.; Pavlychenko, T. K.; Manson, J. M. *et al.* Chemical weed killers. III. Relative toxicity of several chemicals to perennials under field conditions. *Canad. J. Res.* 15, 1937 (442-449).

632.954—Greig, J. L. The use of chemicals for the eradication ofalang grass. *Malay. Agric. J.* 25, 1937 (363-369).

632.954 : 546.27—Crafts, A. S.; Raynor, R. N. The herbicidal properties of boron compounds. *Hilgardia*, 10, 1936 (343-374).

632.954 : 631.46—Newton, J. D.; Paul, A. D. Decomposition and movement of herbicides in soils, and effects on soil microbiological activity and subsequent crop growth. Part II. *Canad. J. Res.* 13, 1935 (101-114).

632.954 : 631.46—Stapp, C.; Buchsteeg, W. Investigation on the effect of sodium chlorate on the microbiological status of the soil. *Zbl. Bakt.* 97, 1937 (1-33). [G.]

632.954.1—Ball, W. E.; French, O. C. Sulfuric acid for control of weeds. *Calif. Agric. Expt. Sta. Bull.* 596, 1935, pp. 29.

632.954.1—Blackman, G. E.; Templeman, W. G. The eradication of weeds in cereal crops by sulphuric acid and other compounds. *J. Agric. Sci.* 26, 1936 (368-390).

632.954.1 French, O. C. Application of sulfuric acid for weed control. *Agric. Engng.* 17, 1936 (339-340).

632.954.6—American Society of Agronomy. Control of weeds in lawns with calcium cyanamid. *J. Amer. Soc. Agron.* 25, 1933 (82-84).

632.954.6—Hurst, R. H.; Trifitt, M. J. Calcium cyanamide and other artificial fertilizers in the treatment of soil infected with *Heterodera schachtii*. *J. Helminth.* 13, 1935, No. 4 (201-218). E.S.R. 76 (58).

632.954.6—Richardson, H. L. Field experiments on the action of calcium cyanamide on germinating seeds and on charlock in barley. *Emp. J. Expt. Agric.* 3, 1935 (41-49).

632.954.8—Davison, R. H. Noxious weed control in orchards. *Idaho. St. Hort. Assoc. Proc. 38th Ann. Conv.* 1933 (54-59). C.A. 28 (6928).

632.954.8—Crafts, A. S. Factors influencing the effectiveness of sodium chlorate as a herbicide. *Hilgardia*, 9, 1935 (437-457).

632.954.8—Crafts, A. S. Physiological problems connected with the use of sodium chlorate in weed control. *Plant Physiol.* 10, 1935 (699-711).

632.954.8 Flerov, K. V. The effect of chlorates on soil. "Weed control" *Sel'khozgiz*, 1935 (171-178). *Pedology*, 1935 (919). [R.]

632.954.8 Hulbert, H. W.; Benjamin, L. V. Dry application of chlorates. *Idaho Agric. Expt. Sta. Circ.* 74, 1935 (3-8). C.A. 30 (216).

## FERTILIZERS AND GENERAL AGRONOMY

**632.954.8—Smith, J. D.** Eradicating roadside weeds. *Engng. Contract Rec.* 49, 1935 (848-850). B.C.A. 56 (481).

**632.954.8—Bickmore, R. C.** Chlorates for weed-killing. The practical aspects. *Fert. Feed. J.* 21, 1936 (328-329).

**632.954.8—Ungerer, E.** Action of sodium chlorate on plants and soils. *Ztschr. Pflanz Düng.* 39, 1935 (156-159). B.C.A. 54 (821). [G.]

**632.954.8—Herrmann, E.** Sodium chlorate as a means of suppressing *Calamagrostis epigeios*. *Forstarchiv*, 13, No. 6-7, 1937 (106-110). C.M.R. No. 14 (6).

**632.954.9—Skinner, C. E.; Sandhoff, Allan.** Nitrogen transformations of ammonium sulphocyanate, a weed eradicator, in the soil. *Sci. Proc. 36th Ann. Meet. Soc. Amer. Bact. Abs. J. Bact.* 29 1935 (79).

**632.954.9—Woolcock, J. W.** Control of ragwort with "Atlacide" as compared with sodium chlorate. *N.Z. J. Agric.* 53, 1936 (65-68).

### 633.1 CEREALS

**633.1.1.415.1—Papadakis, J. S.** Soil reaction and varietal adaption. *Inst. Kallit. Fyton Thessalonike Epist. Delt.* 18, 1935, pp. 16. E.S.R. 74 (34). [G.e.]

**633.1.1.415.1—Kawashima, R.** The effect of reaction and lime content of soil on the yield and composition of crops. VIII. Wheat, buckwheat, rye and oats. *J. Sci. Soil Japan*, 11, 1937 (11-22). [J.e.]

**633.1.1.416.856—Greaves, J. E.; Andersen, A.** Influence of soil and variety on the copper content of grains. *J. Nutrit.* 11, 1936 (111-118).

**633.1.1.421—Bose, S. S.; Menon, T. V. G.** Statistical notes for agricultural workers. No. 23. A statistical study of the deterioration of yields of the permanent manurials, Pusa. *Indian J. Agric. Sci.* 7, 1937 (205-213).

**633.1.1.421—Menon, T. V. G.; Bose, S. S.** Statistical notes for agricultural workers. No. 22. A statistical study of the yields of the permanent manurials, Pusa. *Indian J. Agric. Sci.* 7, 1937 (193-204).

**633.1.1.445.7—Rounce, N. V.; Milne, G.** The unsuitability of certain virgin soils to the growth of grain crops. *E. Afric. Agric. J.* 2, 1936 (145-148).

**633.1.1.51—Vorster, P. W.** Cereals and soil cultivation. I. Lessons learnt at the Jongenslip experiment plot. *Farm. S. Africa*, 11, 1936 (469-471).

**633.1.1.81—Blanck, E.; Heukeshoven, W.; Schorstein, H.** A second contribution on the influence of nutrient ratios in the fertilizing of oats and barley. *J. Landw.* 84, 1936 (37-58). [G.]

**633.1.1.81—Miller, W. B.; Hore, H. L.** Mallee wheat tests—results at Mallee Research Station. *J. Dept. Agric. Victoria*, 34, 1936 (505-516).

**633.1.1.81—Tiutlakov, L. F.** Tilling, growth and drying off of the secondary stalks of cereals. *Khim. Sotsial. Zemled.* No. 6, 1936 (72-80). [R.e.]

**633.1.1.81—Crowther, F.; Tomforde, A.; Mahmoud, A.** Experiments in Egypt on the interaction of factors in crop growth.



# BIBLIOGRAPHY OF SOIL SCIENCE

5. Manuring of wheat, barley, maize and rice. *Roy. Agric. Soc. Egypt Tech. Sect. Bull.* 28, 1937, pp. 63.
- 633.1-1.81—Zaslavsky, E. O. Supplementary manuring for winter cereals. *Khim. Sotsial. Zemled.* No. 2, 1937 (24-37). [R.]
- 633.1-1.81 : 551.577—Cochran, W. G. A note on the influence of rainfall on the yield of cereals in relation to manurial treatment. *J. Agric. Sci.* 25, 1935 (500-522).
- 633.1-1.811.91—Conrad, J. P. Distribution of residual soil moisture and nitrates in relation to the border effect of corn and sorgho. *J. Amer. Soc. Agron.* 29, 1937 (367-378).
- 633.1-1.813—Saew, J. Effect of physiologically acid manuring on the yield of winter rye and wheat on chernozem soils. *Leu i Konoplia*, 10, 1933 (44-49). B.C.A. 55 (115).
- 633.1-1.825—Kinzerskaia, K. N. The effect of iron sulphate on the yield of grain. *Khim. Sotsial. Zemled.* No. 11, 1936 (41-51). [R.]
- 633.1-1.83—Prokoshev, V. N.; Ustluzhanina, E. M. Comparative effect of potassium fertilizers for cereals. *Miner. Udob.* 5, 1935 (59-69). [R.]
- 633.1-1.84—Richardson, A. E. V. Nitrogen in relation to cereal culture. *J. Dept. Agric. S. Aust.* 38, 1935 (954-971).
- 633.1-1.84—Demolon, A. Nitrogenous fertilizers and the N content of grain. *C.R. Acad. Agric.* 22, 1936 (304-305). [F.]
- 633.1-1.893.12—Nemec, A. The effect of Nitrophos on the yield of summer grains. *Lauda. Fachpresse Tschech.* 13, 1935 (70). Z.P.D. 41 (106).
- 633.1-2.19 : 546.711—Leeper, G. W. Manganese deficiency in cereals. *Proc. Roy. Soc. Victoria*, 47 (n.s.), 1935 (225-261).
- 633.1-2.4-1.415.3—Machacek, J. E. Preliminary investigations on the effect of excessive soil salinity on the incidence of cereal root rots. *Sci. Agric.* 17, 1936 (215-224). [E.f.]
- 633.1-2.4-1.81—Gassner, G.; Hassebrauk, K. Two year field experiments on the influence of fertilizing on the rust susceptibility of cereals. *Phytopath. Ztschr.* 7, 1934 (53). Z.P.D. 37 (361).
- 633.1-2.4-1.81—Vanterpool, T. C. Studies on browning root rot of cereals. III. Phosphorus-nitrogen relations of infested fields. IV. Effects of fertilizer amendments. V. Preliminary plant analyses. *Canad. J. Res.* 13C, 1935 (220-250).
- 633.11 : 633.31—Metzger, W. H. The residual effect of alfalfa cropping periods of various lengths upon the yield and protein content of succeeding wheat crops. *J. Amer. Soc. Agron.* 27, 1935 (653-660).
- 633.11-1.4—Throckmorton, R. I. Regional land use for the hard red winter wheat belt. *J. Amer. Soc. Agron.* 28, 1936 (165-172). *Biol. Abs.* 10 (2297).
- 633.11-1.4 : 664.641.016—Bayfield, E. G. The effect of soil and climate upon wheat quality, 1930-1933. *Ohio Agric. Expt. Sta. Dept. Agron. Mimeo. Rept.* 30, Nov. 1, 1934, pp. 45.
- 633.11-1.4 : 664.641.016—Schribaux; Miège. Influence of the nature of the soil on the composition and baking quality of wheat. *C.R. Acad. Agric.* 21, 1935 (831-836). [F.]
- 633.11-1.416.323—Horn, M. J.; Nelson, E. M.; Jones, D. B. Studies on toxic wheat grown on soils containing selenium. *Cereal Chem.* 13, 1936 (128-139). E.S.R. 76 (437).

# FERTILIZERS AND GENERAL AGRONOMY

- 633.11-1.416.323—Robinson, W. O.** Selenium content of wheat from various parts of the world. *Indust Engng. Chem.* **28**, 1936 (736-738).
- 633.11-1.432.2—Waldron, L. R.** Yield and protein content of hard red spring wheat under conditions of high temperature and low moisture. *J. Agric. Res.* **47**, 1933 (129-147).
- 633.11-1.432.2—Bracken, A. F.; Cardon, P. V.** Relation of precipitation to moisture storage and crop yield. *J. Amer. Soc. Agron.* **27**, 1935 (8-20).
- 633.11-1.432.2 Joret, G.; Malterre, H.** Crops grown in the Sauterre region. I. Wheat. *Ann. Agron.* **5** (n.s.) 1935 (632-677). B.C.A. **55** (385).
- 633.11-1.432.2—Hallsted, A. L.; Mathews, O. R.** Soil moisture and winter wheat with suggestions on abandonment. *Kans. Agric. Expt. Sta. Bull.* **273**, 1936, pp. 46.
- 633.11-1.445.2-1.81—Samollov, I. I.; Zinzadze, A. F.** Soil conditions and mineral fertilizers for wheat in the northern regions. *Khim. Sotsial. Zemled.* Nos. 11-12, 1935 (41-51). [R.]
- 633.11-1.445.4-1.81—Pronin, M. E.; Zav'ialov, N. V.; Udris, P. Y.** Some of the conditions for the efficient use of mineral fertilizers for spring wheat under the dry conditions of the Azov-Black Sea region. *Khim. Sotsial. Zemled.* Nos. 7-8, 1936 (41-50). [R.]
- 633.11-1.445.51-1.81—Yan'shina, M. Ya.; Kovalev, N. P.** Amounts and times of application of fertilizers for irrigated wheat on chestnut soils. *Sotsial. Zern. Khoz.* No. 2, 1936 (30-38). [R.]
- 633.11-1.452—Lamb, C. A.** Response of wheat varieties to different fertility levels. *J. Agric. Res.* **53**, 1936 (129-143).
- 633.11-1.51—Garner, F. H.; Sanders, H. G.** Investigations in crop husbandry. IV. The preparation of the seed bed for wheat after potatoes. *J. Agric. Sci.* **26**, 1936 (415-423).
- 633.11-1.51—Garner, F. H.; Sanders, H. G.** On the spring cultivation of autumn sown wheat. *J. Agric. Sci.* **27**, 1937 (447-457).
- 633.11-1.531.2—Kieselbach, T. A.; Lyness, W. E.** Furrow versus surface planting winter wheat. *J. Amer. Soc. Agron.* **26**, 1934 (289-293). E.S.R. **71** (770).
- 633.11-1.531.2—Nalivkin, A. A.** Some problems of the sowing complex of winter wheat in the non-chernozem region. *Khim. Sotsial. Zemled.* Nos. 11-12, 1935 (108-115).
- 633.11-1.582—Vorster, P. W.** Cereals and soil cultivation. II. Crop-rotation systems for the Caledon-Bredasdorp-Swellendam area. *Farm. S. Africa*, **12**, 1937 (205-206, 217).
- 633.11-1.586-1.81—Gal'chenko, I. N.** Influence of fertilizers on the accumulation of nutrients in spring wheat under dry-farming conditions. *Sotsial. Zern. Khoz.* No. 4, 1935 (14-39). [R.]
- 633.11-1.67—Robertson, D. W.; Kezer, A. et al.** Studies on the critical period for applying irrigation water to wheat. *Colo. Agric. Expt. Sta. Tech. Bull.* **11**, 1934, pp. 43. E.S.R. **72** (769).
- 633.11-1.67—Ryzhenkova, M. G.** Yields of irrigated wheat on saline brown soils. *Khim. Sotsial. Zemled.* No. 8, 1935 (71-85). [R.]
- 633.11-1.67—Nevsky, S. P.** Irrigation for wheat. *Sotsial. Zern. Khoz.* No. 4, 1936 (40-46). [R.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- 633.11-1.67—Petinov, N. S. Irrigation of Transvolga wheat. *Bull. Acad. Sci. (U.S.S.R.) (Cl. sci. math.). Biol. Ser.* No. 1, 1936 (37-78). [R.g.]
- 633.11-1.67:581.192—Petinov, N. S. Methods of controlling the grain quality of irrigated wheats. *C.R. Acad. Sci. (U.S.S.R.)* 1, 1935 (68-71). [R.e.]
- 633.11-1.67:581.192—Laikov, I. A. The quality of grain under irrigation and manuring. *Sotsial. Zern. Khoz.* No. 7, 1936 (88-96). [R.e.]
- 633.11-1.67-1.81—Chizhov, B. A. Mineral and organic manures for irrigated wheat in the Transvolga. *Sotsial. Zern. Khoz.* No. 4, 1936 (21-33). [R.]
- 633.11-1.67-1.81—Surdutovich, Ya. M. Mineral fertilizers applied to irrigated autumn sown wheat. *Khim. Sotsial. Zemled.* No. 6, 1937 (12-26). [R.]
- 633.11-1.67-1.81—Yan'shina, M. Ya. Applications of N and K to irrigated wheat. *Sotsial. Zern. Khoz.* No. 5, 1937 (65-70). [R.]
- 633.11-1.67-1.84—Robertson, D. W. Factors affecting chlorosis in irrigated wheat. *J. Agric. Res.* 55, 1937 (511-520).
- 633.11-1.67-1.84—Tulaikov, N. M. Fractional application of nitrogenous fertilizers on spring wheat under irrigation. *Soil. Sci.* 44, 1937 (293-298).
- 633.11-1.81—Garola, J. Experiments on the effect of fertilizers, of the closeness of sowing and of the spacing of the lines on the yield of Hybrid 40 variety of wheat. *Rech. Fert. Sta. Agron. Douai, 1934, 1935* (24-28). C.A. 29 (6999).
- 633.11-1.81—Garola, J. Action of fertilizers on the development and nutrition of wheat. *Rech. Fert. Sta. Agron. Douai, 1934* (28-32). C.A. 29 (7000).
- 633.11-1.81—Joret, G.; Malterre, H. Results of experiments and observations on wheat culture on loam soils. *J. Agric. Prat.* 64, 1935 (511-515). [F.]
- 633.11-1.81—Danchenko, F. Mineral fertilizers and lime for spring wheat. *Sotsial. Rekonstr. S.Kh.* No. 8, 1936 (207-209).
- 633.11-1.81—Guyon, G. The effect of incomplete manures on wheat. *Ann. Agron.* 6 (n.s.), 1936 (559-567). [F.]
- 633.11-1.81—Kurapov, I. A. The influence of supplementary manuring on the yield of winter wheat. *Khim. Sotsial. Zemled.* No. 1, 1937 (59-66). [R.]
- 633.11-1.81—Miller, L. B.; Bauer, F. C. The effect of soil treatment in stabilizing yields of winter wheat. *J. Amer. Soc. Agron.* 29, 1937 (728-734).
- 633.11-1.81:551.58—Hopkins, J. W. Influence of weather on the nitrogen content of wheat. *Canad. J. Res.* 12, 1935 (228-237).
- 633.11-1.81:551.58—Maume, L.; Dulac, J. The importance of environment (climate and soil) in the absorption of  $N$ ,  $P_2O_5$ ,  $K_2O$ , by wheats in a similar physiological stage. *C.R. Acad. Agric.* 21, 1935 (120-123). [F.]
- 633.11-1.81:551.58—Miyake, K.; Ishizuka, Y. Relation between the temperature and ratio of fertilizer ingredients to be given to the wheat plant. I. *J. Sci. Soil Japan*, 9, 1935 (281-297). [J.]
- 633.11-1.81:581.192—Fabbri, A. Presence of soft grains in hard wheat (Diamino-Chiesa) and its dependence on manuring.

# FERTILIZERS AND GENERAL AGRONOMY

*Ann. Sta. Sper. Agrar. Modena*, 3, 1934 (457-467). B.C.A. 55 (806). [I.]

**633.11-1.81 : 581.192**—Valček, J. The effect of fertilizers on the yield and quality of some varieties of winter wheat. *Zeměd. Pokrok*, 1, 1934 (72). Z.P.D. 42 (100).

**633.11-1.81 : 581.192**—Garqia. Cultivation of wheat in Beauce. *C.R. Acad. Agric.* 21, 1935 (269-276). B.C.A. 55 (115). [F.]

**633.11-1.81 : 581.192**—Pfaff, C. Influence of manuring on wheat quality. *Angew. Chem.* 48, 1935 (89-92). B.C.A. 54 (325). [G.]

**633.11-1.81 : 581.192**—Bayfield, E. G. The influence of climate, soil, and fertilizers upon quality of soft winter wheat. *Ohio. Agric. Expt. Sta. Bull.* 563, 1936, pp. 77.

**633.11-1.81 : 581.192**—Potel, P. The effect of variations in a soil caused by continuous applications of the same fertilizer on wheat yields. *C.R. Acad. Agric.* 22, 1936 (882-886). [F.]

**633.11-1.81 : 581.192**—Stieglitz, H. Contribution to the cell sap chemistry of winter wheat. *Ztschr. Pflanz. Düng.* 43, 1936 (152-170). [G.]

**633.11-1.81 : 581.192**—Bulletin des Engrais. Effect of fertilizer on wheat quality. *Bull. Engrais*, 10, 1937 (33). [F.]

**633.11-1.81 : 664.641.016**—Borasio, L. Fertilizing in relation to baking quality of wheat. *G. Riscolt.* 23, 1933 (56). Z.P.D. 38 (372). [I.]

**633.11-1.81 : 664.641.016**—Hickinbotham, A. R. The baking qualities of Australian wheats. No. 4. The quality of (a) commercial samples of South Australian wheat and (b) some pure lines of Ford. *J. Dept. Agric. S. Aust.* 38, 1934 (190-200).

**633.11-1.81 : 664.641.016**—Guyon, G. Chemical factors and the quality of the harvests. *Ann. Agron.* 5 (n.s.), 1935 (240-248).

**633.11-1.81 : 664.641.016**—Pfaff, C. Influence of fertilizing on the quality of wheat. *Ergeb. AgrikChem.* 3, 1935 (87-98). *Bied. Zbl.* 65 (405).

**633.11-1.81 : 664.641.016**—Nicolas, G.; Chalaud, G.; Genieys, P. Action of fertilizer on the baking qualities of some wheats. III. *Prog. Agric. Vit.* 105, 1936 (617-620). C.A. 30 (6497).

**633.11-1.81 : 664.641.016**—Pelshenke, P. The effect of manuring on the quality of bread cereals. *ForschDienst.* 1, 1936 (377-382). [G.]

**633.11-1.81 : 664.641.016**—Potel, P. Recent research on wheat and flour quality. *Ann. Agron.* 6 (n.s.), 1936 (831-854).

**633.11-1.81 : 664.641.016**—Schnelle, F.; Helser, F. Fertilization and wheat quality. *Mühlentab.* 6, 1936 (183-192). B.C.A. 56 (271).

**633.11-1.81 : 664.641.016**—Pelshenke, P. Influence of fertilizers on the baking quality of cereals. *Ernähr. Pflanze*, 33, 1937 (321-324). [G.esp.]

**633.11-1.811**—Maume, L.; Dulac, J. Absorption of N, P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O, CaO and MgO by different varieties of wheat, observed the same year in the same medium. *Ann. Ec. Agric. Montpellier*, 23, 1934 (96-103). C.A. 30 (4968).

**633.11-1.811**—Vincent, V.; Herviaux, J.; Sarazin. Requirement of manurial elements of different varieties of wheat. *C.R. Acad. Agric.* 21, 1935 (593-595). B.C.A. 55 (115). [F.]

## BIBLIOGRAPHY OF SOIL SCIENCE

633.11-1.811—Woodford, E. K.; McCalla, A. G. The absorption of nutrients by two varieties of wheat grown on the black and gray soils of Alberta. *Canad. J. Res.* 14, 1936 (245-266).

633.11-1.811.3—Marimpietri, L. Potassium nutrition of wheat. *Ann. Sta. Chim.-Agrar. Roma*, 14, No. 313, 1934, pp. 19. B.C.A. 54 (73).

633.11-1.811.91—Rogers, W. S. Soil moisture studies. 1. Water utilization by apple trees in cultivated and grass orchard, compared with fallow land. *E. Malling Res. Sta. 24th Ann. Rept.* 1937 (105-109).

633.11-1.815—Burgevin, H.; Guyon, G. Delayed action of nitrogenous fertilizers in the cultivation of wheat. *Rech. Fert. Sta. Agron. Douai*, 1934, 1935 (59-63). C.A. 29 (7003).

633.11-1.815—Yakushkin, I. V. Wheat and manuring. *Khim. Sotsial. Zemled.* Nos. 11-12, 1935 (38-41). [R.]

633.11-1.815—Lefort, A. Residual effect of unbalanced fertilizers on wheat. *Bull. Rens. Serv. Agric. Nov.-Dec.* 1936 (3559-3562). [F.]

633.11-1.816.2—Kurchatov, P. A.; Lupinovich, I. S.; Buziuk, M. I. Time of application of mineral fertilizers for spring wheat and potatoes. *Trudy Belorussk. S. Kh. Inst.* 5, 1936 (127-147).

633.11-1.816.2—Bezusy, G. D. Spring application of fertilizers for autumn sown wheat. *Khim. Sotsial. Zemled.* No. 4, 1937 (32-40). [R.]

633.11-1.816.2—Chernetsky, A. I. Time of application of supplementary fertilizers to winter wheat. *Khim. Sotsial. Zemled.* No. 1, 1937 (67-79). [R.]

633.11-1.816.2—Demidenko, T. T.; Popov, V. P. Fertilizer treatment and absorption of nutrients by spring wheat. *Khim. Sotsial. Zemled.* No. 2, 1937 (38-47). [R.]

633.11-1.816.2-1.84—Tommasi, G. Winter manuring of wheat with nitrogen. *Ann. Sta. Chim.-Agrar. Roma*, 14, No. 301, 1933, pp. 23. B.C.A. 54 (373). [I.]

633.11-1.816.2-1.84—Chiappelli, R. An interesting fertilizing experiment with wheat. *G. Rivolt.* 25, 1935 (196). *Superphosphate* 9 (13).

633.11-1.816.2-1.84—Garner, F. H.; Sanders, H. G. Investigations in crop husbandry. III. Effect of time of application of sulphate of ammonia to wheat. *J. Agric. Sci.* 26, 1936 (316-327).

633.11-1.816.2-1.84—Goia, G.; Marani, M. Influence of the quantity of seed and of winter application of nitrogen on the density of the spikes of the wheat varieties "Damiano" and "Mentana". *Ital. Agric.* 73, 1936 (21-32).

633.11-1.816.2-1.84—Watson, D. J. The effect of applying a nitrogenous fertiliser to wheat at different stages of growth. *J. Agric. Sci.* 28, 1936 (391-414).

633.11-1.816.3—Minina, E. G. Influence of method of distributing fertilizers on quality and yield of wheat grain. *C.R. Acad. Sci. (U.S.S.R.)*, 2, 1935 (173-176). B.C.A. 54 (689). [R.]

633.11-1.83:664.641.016—Lemmerzähl, J.; Limbach, R. The effect of increasing potash additions and temporary variations in fertilizing on the baking quality of wheat. *Mitt. D.L.G.* 48, 1933 (983). Z.P.D. 13B (469). [G.]

# FERTILIZERS AND GENERAL AGRONOMY

- 633.11-1.83 : 664.641.016**—McCalla, A. G. ; Woodford, E. K. The effect of potassium supply on the composition and quality of wheat. II. *Canad. J. Res.* 13, 1935 (339-354).
- 633.11-1.84/5**—Parsons, F. G. The relation of number of wheat heads and increased yield as influenced by phosphate and nitrogen fertilizers. *Amer. Fert.* 83, July 27, 1935 (5-6).
- 633.11-1.84/5 : 664.641.016**—Fabbri, A. Influence of manuring with nitrogen and phosphate at various stages of development of cereals on the milling quality of the grain and the baking quality of the flour. *Ann. Sta. Sper. Agrar. Modena*, 3, 1934 (469-490). B.C.A. 55 (806). [I.]
- 633.11-1.84**—Fabbri, A. Nitrogenous manurial trials with cereals, in relation to agronomic, physiological, and technical properties. *Ann. Sta. Sper. Agrar. Modena*, 3, 1934 (491-550). B.C.A. 55 (806). [I.]
- 633.11-1.84**—Berkner. The action of nitrogen fertilizers on winter wheat in the drought year of 1933. *Deut. Landw. Pr.* 61, 1934 (289-290, 303). C.A. 28 (7401).
- 633.11-1.84**—Thelin, G. ; Beaumont, A. B. The effect of some forms of nitrogen on the growth and nitrogen content of wheat and rice plants. *J. Amer. Soc. Agron.* 26, 1934 (1012-1017). E.S.R. 72 (761).
- 633.11-1.84**—Visser, R. H. Manuring experiments with wheat. *Versl. Tech. Tarwe Comm.* 1935 (79-110). [Du.e.]
- 633.11-1.84**—Garola, J. New investigations on the effect of nitrogen, the density of sowing and climatic conditions on wheat culture. *C.R. Acad. Agric.* 22, 1936 (296-303). [F.]
- 633.11-1.84**—Tulaikov, N. M. Fractional application of nitrogenous fertilizers to spring wheat. *Khim. Sotsial. Zemled.* No. 6, 1937 (3-11). [R.]
- 633.11-1.842**—Titta, G. The method of applying nitrate to wheat. *Ist. Agrar. Pisa Boll.* 11, 1935 (161-166). [I.]
- 633.11-1.85**—Kirsanov, A. T. ; Kirsanova, E. E. ; Lutsernova, G. A. The effect of  $P_2O_5$  fertilizers on spring wheat on rendzina soils with different pH values. *Trudy Gedronz Inst. Udob. Leningr. Lab.* 45, 1936 (7-28). [R.e.]
- 633.11-2.111-1.86**—Popov, V. P. Role of combined water in the frost-resistance of winter wheat. *C.R. Acad. Sci. (U.S.S.R.)* 14, 1937 (49-52). B.C.A. 58 (479).
- 633.11-2.112**—Aarnodt, O. S. ; Johnston, W. H. Studies on drought resistance in spring wheat. *Canad. J. Res.* 14, 1936 (122-152).
- 633.11-2.4**—Adam, D. B. ; Colquhoun, T. T. The spread of take-all through the soil. *J. Aust. Inst. Agric. Sci.* 2, 1936 (172-174).
- 633.11-2.4**—Blair, I. D. An investigation of foot rot of wheat in New Zealand. *N.Z. J. Sci. Tech.* 19, 1937 (1-21).
- 633.11-2.4-1.4**—Garrett, S. D. Soil conditions and the take-all disease of wheat. *Ann. Appl. Biol.* 23, 1936 (667-699).
- 633.11-2.4-1.432.2**—Hassebrauk, K. Significance of soil moisture in the behaviour of *Puccinia graminis* and *P. triticea* towards different wheat varieties. *Phytopath. Ztschr.* 7, 1934 (259-269). B.C.A. 54 (244).
- 633.11-2.4-1.436**—Krebs, J. The influence of soil temperature on the infection of wheat seedlings by *Ophiobolus graminis* Sacc.,

# BIBLIOGRAPHY OF SOIL SCIENCE

- the cause of "take-all". *Schweiz. Landw. Monatsh.* 11, 1933 (285-291). *Biol. Abs.* 9 (285). [G.]
- 633.11-2.4-1.472—Fellows, H.; Ficke, C. H.** Effects on wheat plants of *Ophiobolus graminis* at different levels in the soil. *J. Agric. Res.* 49, 1935 (871-880).
- 633.11-2.4-1.81—Ryzhkova, Z. F.** Influence of fertilizers on the appearance of bunt on spring wheats. *Inst. Plant Prot. Leningr. Summ. Sci. Res.* 1935, 1936 (134-135). *R.A.M.* 15 (786). C.A. 31 (2733).
- 633.11-2.4-1.855—Surányi, J.** Results of wheat fertilizing experiment in a rust year 1931-32. *Köztelek.* 43, 1933 (590). [H.]
- 633.11-2.4-1.855:546.22—Blin, H.** Footrot of wheat. The effect of sulphur and superphosphate. *J. Agric. Prat.* 65, 1936 (94-95). [F.]
- 633.13:546.56—Scharrer, K.; Schropp, W.** The action of the copper ion upon the development and composition of oat plants. *Bodenk. Pflernähr.* 1, 1936 (168-175). C.A. 31 (1934). [G.]
- 633.13-1.4:581.192—Scheite, A.** Value of oat seed as determined by morphological and chemical analysis. *Fortschr. Landw.* 8, 1933 (337-343). B.C.A. 54 (689).
- 633.13-1.415.1-1.811.2—Meurice, R.; Demortier, G.** Phosphoric acid requirements of the "von Kalben" oat in relation to soil reaction. *Bull. Inst. Agron. Gemblour.* 5, 1936 (304-309). [F.dug.e.]
- 633.13-1.81—Lefort.** Action of unbalanced fertilizers on the cultivation of oats. *Rech. Fert. Sta. Agron. Douai*, 1934, 1935 (37-39). C.A. 29 (7000).
- 633.13-1.81—Lefort, C.; Anquez, L.** The effect of unbalanced fertilizers on sugar beet and oats. *Ann. Agron.* 5 (n.s.), 1935 (786-800). [F.]
- 633.13-1.81—Blanck, E.; Schorstein, H.** The influence of nutrient ratios in the fertilizing of oats and a contribution to the utilization of phosphate by them. *J. Landw.* 84, 1936 (59-74). [G.]
- 633.13-1.81—Pawlik, R.** Fertilizer experiments with oats covering a period of two years. *Superphosphate* 9, 1936 (181-185).
- 633.13-1.811.1—Smith, A. M.** The uptake of nitrogen by oats under different conditions. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (210-212).
- 633.13-1.84—Sundellin, G.; Bachér, I.** Combined variety with nitrogen experiments with oats. *Medd. Cent.Anst. Forsokse. Jordbr.* 448, 1935, pp. 36. [Sw.e.]
- 633.13-1.84—Joret, G.; Malterre, H.** Agronomic researches on crops on the silt soils of Santerre. II. Spring oats. *Ann. Agron.* 6 (n.s.), 1936 (409-426). [F.]
- 633.13-1.84—Thomas, I.** Nitrogen on stubble trials. *J. Dept. Agric. W. Aust.* 13, 1936 (116-119).
- 633.13-1.85—Lityński, T.** The injurious effect of extra large applications of phosphorus on oats. *Rocz. Nauk Roln.* 34, 1935 (233-253). C.A. 29 (5974). [P.e.]
- 633.13-2.183—Donald, G.** Some factors influencing the standing power of oats. *Scot. J. Agric.* 18, 1935 (34-40).
- 633.13-2.19—Gerretsen, F. C.** Investigation of the causes of the grey speck disease of oats. *Versl. Rijkslandb.Proefsta. Groningen* 42 (1) A, 1936 (1-67).

# FERTILIZERS AND GENERAL AGRONOMY

- 633.13-2.19-1.415.3—Storck, G.** Is an alkaline soil reaction the cause of grey speck of oats? *Bodenk. PflErnähr.* 1, 1936 (247-256). [G.]
- 633.13-2.19-1.461:546.711—Gerretsen, F. C.** The effect of manganese deficiency on oats, in relation to soil bacteria. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (189-191).
- 633.13-2.19-1.461:546.711—Gerretsen, F. C.** Manganese deficiency of oats and its relation to soil bacteria. *Ann. Bot.* 1 (n.s.), 1937 (207-230).
- 633.13-2.19-1.81—Meijer, C.** Report on a five-fold continuous manuring experiment. *Versl. RijkslandbProefsta. Groningen* 42 (2) A, 1936 (73-144).
- 633.13-2.2-1.415.3—Chapman, L. J.; Putnam, D. F.** A new menace to oats. Serious infestation of nematodes attacks grain crops on a certain type of alkaline soil. *Farmer*, Jan. 1935 (5-6).
- 633.14-1.415.1—Bruin, P.** Some results of lime field experiments on arable soils. *Versl. RijkslandbProefsta. Groningen*, 42 (18) A, 1936 (773-819). [Du.g.]
- 633.14-1.85—Vostokov, V. I.** Effect of fertilizers on the yield of rye. *Sotsial. Zern. Khoz.* No. 5, 1935 (82-107). [R.]
- 633.14-2.4-1.432.2—Ling, L.; Moore, M. B.** Influence of soil temperature and soil moisture on infection of stem smut of rye. *Phytopath.* 27, 1937 (633-636).
- 633.15-1.452—Stringfield, G. H.; Salter, R. M.** Differential response of corn varieties to fertility levels and to seasons. *J. Agric. Res.* 49, 1935 (991-1000).
- 633.15-1.582—Wilkins, F. S.; Hughes, H. D.** Effect of Sudan grass and of soybeans on yield of corn. *J. Amer. Soc. Agron.* 26, 1934 (901-909).
- 633.15-1.67-1.81—Elliott, H. G.** Maize fertilizer trials. *J. Dept. Agric. W. Aust.* 12 (s.s.) 1935 (285-290).
- 633.15-1.67-1.81—Voronin, N. G.** Kolkhoz irrigated fields. *Sotsial. Zern. Khoz.* No. 2, 1936 (63-81). [R.e.]
- 633.15-1.81—Huelsen, W. A.; Gillis, M. C.** Fertilizer treatments of sweetcorn. *Ill. Agric. Expt. Sta. Bull.* 417, 1935 (353-435). C.A. 30 (211).
- 633.15-1.81—Elliott, H. G.** Maize fertilizer trials 1935-36. *J. Dept. Agric. W. Aust.* 13, 1936 (362-366).
- 633.15-1.81:581.192—Lowry, M. W.; Huggins, W. C.; Forrest, L. A.** The effect of soil treatment on the mineral composition of exuded maize sap at different stages of development. *Ga. Agric. Expt. Sta. Bull.* 193, 1936, pp. 28.
- 633.15-1.81:581.192—Wimer, D. C.** Composition of mature corn stover. *Ill. Agric. Expt. Sta. Bull.* 437, 1937 (175-272).
- 633.15-1.811—Duncan, G. H.** Influence of nutritional balance upon the development of corn plants. *Trans. Ill. Acad. Sci.* 23, 1931 (143-148). E.S.R. 4 (30).
- 633.15-1.811—Radu, I. F.** The cycle of the uptake of N,  $P_2O_5$ ,  $K_2O$ ,  $CaO$  and  $MgO$  by different varieties of maize. *Bodenk. PflErnähr.* 2, 1937 (351-383). [G.]
- 633.15-1.811.2—Lyness, A. S.** Varietal differences in the phosphorus capacity of plants. *Plant Physiol.* 11, 1936 (665-688). *Herb. Abs.* 7 (75).



# BIBLIOGRAPHY OF SOIL SCIENCE

- 633.15-1.811.7—Heiserich, E. Investigations of the sulphur cycle in maize and tobacco. *Ztschr. Pflanz. Düng.* 37, 1935 (55-72). [G.]
- 633.15-1.855—Cornell, H. H. The method of applying superphosphate to maize. *Farm. S. Africa*, 10, 1935 (157-158).
- 633.15-2.19:546.27—Eltinge, E. T. The effect of boron deficiency upon the structure of Zea mays. *Plant Physiol.* 11, 1936 (765-778). *Herb. Abs.* 7 (78).
- 633.15-2.19:546.47—Barnette, R. M.; Jones, H. W. Cover crops and the turnover of plant nutrients in the soil. *Citrus Indust.* 15, No. 12, 1934 (15-16).
- 633.15-2.19:546.47—Barnette, R. M.; Warner, J. D. A response of chlorotic corn plants to the application of zinc sulfate to the soil. *Soil Sci.* 39, 1935 (145-156).
- 633.15-2.19:546.47—Barnette, R. M.; Camp, J. P.; Warner, J. D. *et al.* The use of zinc under corn and other field crops. *Fla. Agric. Expt. Sta. Bull.* 292, 1936, pp. 51. C.A. 30 (5706). E.S.R. 75 (209).
- 633.15-2.19-1.416.1—Wadleigh, C. H.; Robbins, W. R.; Beckenbach, J. R. The relation between the chemical nature of the substrate and the degree of chlorosis in corn. *Soil Sci.* 43, 1937 (153-173).
- 633.15-2.4-1.81—Walker, J. M. Factors affecting the development of maize smut, *Ustilago Zeae* (Beckm.) Unger. *Minn. Agric. Expt. Sta. Tech. Bull.* 111, 1935, pp. 67. B.C.A. 56 (71).
- 633.16—Grant, H. C. Barley survey. A study of barley production, exports, imports, marketing, markets and prices in the principal exporting and importing countries in the world. *E.M.B.* 62, March, 1933, pp. 192.
- 633.16:546.815—Keaton, C. M. The influence of lead compounds on the growth of barley. *Soil Sci.* 43, 1937 (401-408).
- 633.16-1.415.2:581.192—Mann, H. H. The character of barley grown on soil made acid with sulphate of ammonia. *J. Agric. Sci.* 27, 1937 (108-122).
- 633.16-1.432.2—Conrad, J. P. The effects of variations in the yields of barley upon the amount and distribution of the residual soil moisture. *J. Amer. Soc. Agron.* 29, 1937 (145-152).
- 633.16-1.81—Auddier, L. The culture of malting barley under actual conditions. *Potasse*, No. 97, 1937 (1-3). [F.]
- 633.16-1.81:581.192—Godtsenhoven, E. van. The cultivation and brewing value of native and foreign barley strains. *Cong. Int. Tech. Chim. Indust. Agric. 4th Cong. Brussels*, 2, 1935 (201-210). C.A. 30 (5348).
- 633.16-1.81:581.192—Lebrun; Radet. Action of incomplete fertilizers on the yield and composition of barley. *Rech. Fert. Sta. Agron. Douai*, 1934, 1935 (39-40). C.A. 29 (7000).
- 633.16-1.81:581.192—Hopkins, J. W. Effect of fertilizers on yield and malting quality of Manitoba barley. *Sci. Agric.* 17, 1936 (250-259). [E.]
- 633.16-1.81:581.192—Hopkins, R. H.; Bishop, L. R. Record and summary of the investigations on barley carried out at Rothamsted, 1923-1933. *J. Inst. Brew.* 43, 1937 (283-287).
- 633.16-1.83:581.192—Byczkowski, A.; Jarmusz, J. The effect of potassium manuring on the nitrogenous content of malting barley. *Rocz. Nauk Roln.* 37, 1936 (291-306). [Pl.g.]

# FERTILIZERS AND GENERAL AGRONOMY

**633.16-1.83:581.192**—Lüdecke, H. On the effect of different applications of potash on the yield and composition of several varieties of barley with special reference to the absorption of potassium by the plant. Part II. Field experiments. *Ernähr. Pflanze* 32, 1936 (273-278). [G.e.]

**633.16-1.83:581.192**—Wirmer, G.; Lüdecke, H. *et al.* The influence of different rates of potash fertilizing on the yield and quality of barley varieties with particular reference to the utilization of the potash assimilated. *Landw. VersSta.* 125, 1936 (128-200).

**633.17-1.453**—Ayyar, V. R.; Kasinathan, S.; Balakrishnan, M. R. Injurious after-effects of sorghum growing. *Curr. Sci.* 4, 1935 (99).

**633.17-1.453**—Loehwing, W. F. Interactions between different plants through their roots. *Proc. 6th Int. Bot. Cong. Amsterdam*, 1935, 1, 1936 (139-142).

**633.18:546.27**—Tokuoka, M.; Morooka, H. The effect of boron on the growth of rice plants. I. The growth inhibiting effect of boron. *J. Sci. Soil Japan* 10, 1936 (189-200).

**633.18:546.27**—Tokuoka, M.; Morooka, H. Effects of boron for the growth of the rice plant. *J. Soc. Trop. Agric. Taiwan* 8, 1936 (211-220). C.A. 31 (7578).

**633.18-1.415.1** Itano, A.; Tsuji, Y. Direct determination of pH of soil in its natural state by the quinhydrone method. I. Determination of pH of paddy-field soil. *Ber. Ohara Inst.* 6, 1935 (587-606). B.C.A. 54 (865).

**633.18-1.415.1**—Kawashima, R. The effect of reaction and lime content of soil on the yield and composition of paddy. *J. Sci. Soil Japan* 10, 1936 (53-62). [J.e.]

**633.18-1.415.1-1.811.1**—Dastur, R. H.; Kalyani, V. V. Hydrogen ion concentration and the intake of nitrogen by rice plant. *Indian J. Agric. Sci.* 4, 1934 (803-831).

**633.18-1.416-1.5**—Kirichenko, K. S. The dynamics of soil processes in rice cultivation. *Trudy Tscent. Sta. Ris. Khoz.* 1934 (51-58). *Pedology* 1935 (913).

**633.18-1.416.1**—Sreenivasan, A.; Subrahmanyam, V. Transformations of nitrogen in the swamp soil. *Proc. Nat. Inst. Sci. India*, 3, 1937 (219-225).

**633.18-1.416.1-1.432.2**—Utagawa, I.; Kuraishi, T. Effect of drought on the amount of available nitrogen in paddy soil. *J. Sci. Soil Japan* 9, 1935 (180-188). C.A. 29 (5969).

**633.18-1.421** Bose, S. S.; Ganguli, P. M.; Mahalanobis, P. C. Statistical notes for agricultural workers. No. 19. The frequency distribution of plot yields and the optimum size of plots in a uniformity trial with rice in Assam. *Indian J. Agric. Sci.* 6, 1936 (1107-1121).

**633.18-1.421**—Chakravarti, S. C.; Bose, S. S.; Mahalanobis, P. C. Statistical notes for agricultural workers. No. 21. The effect of different methods of harvest on the estimated error of field experiments on rice. *Agric. Live-Stk. India* 6, 1936 (814-825).

**633.18-1.43-1.81**—Onodera, I.; Hasegawa, H. Sulphates and chlorides as fertilizers. VII. Influence of both salts on the physical constitution of paddy-field soil fertilized annually for five

## BIBLIOGRAPHY OF SOIL SCIENCE

- years with the same fertilizers. *J. Sci. Soil. Japan* 9, 1935 (357-364). C.A. 30 (1168).
- 633.18-1.432.2—Pallis, G. O. A study of the effects upon growth and development of an upland rice of varying the moisture content of soil in pots. *Philipp. Agricist.* 24, 1935 (393-412). C.A. 30 (206).
- 633.18-1.433.2—Kirchenko, K. S. Evidence of swamping in rice soils. *Trudy Inst. Ris. Khos.* 1933, No. 1 (52). B.C.A. 55 (35).
- 633.18-1.433.2—Dennett, J. H. The loss of phosphates and ammonia from padi soils kept in the laboratory under anaerobic conditions. *Malay. Agric. J.* 24, 1936 (366-373).
- 633.18-1.433.2—Subrahmanyam, V. Some aspects of the chemistry of swamp soil. *Curr. Sci.* 5, 1937 (656-659).
- 633.18-1.434—Hou, K. C.; Ma, Y. T. A study of macroscopic soil characteristics in relation to rice production. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (246-247).
- 633.18-1.436-1.81—Miyake, K.; Ishizuka, Y. Relation between the temperature and the ratio of fertilizer ingredient to be given to rice plants. *J. Sci. Soil Japan* 11, 1937 (49-62). [J.e.]
- 633.18-1.445.2—Hou, K. C.; Ma, Y. T. The morphological aspects of the podzolic rice paddy soils in the Nanchang region, Kiangsu, China. *Spec. Soils Pub. Peiping*, No. 3, 1935, pp. 20. P.I.S. 10 (163).
- 633.18-1.453:546.19—Reed, J. F.; Sturgis, M. B. Toxicity from arsenic compounds to rice on flooded soils. *J. Amer. Soc. Agron.* 28, 1936 (432-436).
- 633.18-1.461.5—De, P. K. The problem of the nitrogen supply of rice. I. Fixation of nitrogen in rice under waterlogged conditions. *Indian J. Agric. Sci.* 6, 1936 (1236-1245).
- 633.18-1.461.5—De, P. K.; Pain, A. K. A biochemical study of the paddy soils of Bengal with special reference to their nitrogen-fixing capacities. *Indian J. Agric. Sci.* 6, 1936 (746-755).
- 633.18-1.461.5—Sahasrabudhe, D. L. Fixation of nitrogen by rice soils and rice plants. *Proc. Indian Acad. Sci.* 3 B, 1936 (310-319).
- 633.18-1.461.5—Sahasrabudhe, D. L. Nitrogen fixation by rice soils and rice plants. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (111-113).
- 633.18-1.466.3—Shioiri, M.; Mitui, S. On the chemical composition of some algae and weeds developing in the paddy field and their decomposition in the soil. *J. Sci. Soil Japan* 9, 1935 (261-268). [J.]
- 633.18-1.5—Codd, L. E. W. Increased yields of padi obtained by double transplanting. *Agric. J. Brit. Guiana*, 5, 1934 (274-276).
- 633.18-1.5—Joachim, A. W. R.; Kandiah, S.; Pandittesekere, D. G. Studies on paddy cultivation. IV. The effect of system of cultivation on the composition of the paddy crop and soil. *Trop. Agricist.* 83, 1934 (339-347).
- 633.18-1.5—Kapp, L. C. A study of factors concerned with rice growth. *Ark. Agric. Expt. Sta. Bull.* 349, 1937, pp. 21.
- 633.18-1.5:616.936—Robertson, R. C.; Chang, T. L. Rice cultivation in relation to malaria. *China J.* 26, 1937 (347-360). C.A.S.B. 4 (5).

## FERTILIZERS AND GENERAL AGRONOMY

- 633.18-1.51:581.144.2**—Haigh, J. C. Studies on paddy cultivation. VII. The effect of cultivation on root development and ear formation. *Trop. Agricut.* 87, 1936 (213-233).
- 633.18-1.67**—Tarkhov, K. N. The results of field experiments with the irrigation of rice. *Agric. Sci. Kazakstan*, 3-4, 1935 (47-52). [R.]
- 633.18-1.67**—Sen, P. K. Studies in the water relations of rice. I. Effect of watering on the rate of growth and yield of four varieties of rice. *Indian J. Agric. Sci.* 7, 1937 (89-117).
- 633.18-1.671**—Dennett, J. H. The effect of irrigation of padi with salt water. *Malay. Agric. J.* 24, 1936 (282-283).
- 633.18-1.81**—Belgrave, W. N. C. Padi manurial experiments, 1933-1934. *Malay. Agric. J.* 22, 1934 (583-597).
- 633.18-1.81**—Macasaet, M. S. A study of the  $N-P_2O_5-K_2O$  ratio for an upland rice (*Oryza sativa* L. var. Inintiw) when grown in tuff soils in pots. *Philipp. Agricut.* 24, 1933 (678-699).
- 633.18-1.81**—Bonney, Rice manuring experiments on Madagascar. *Bull. Rens. Serv. Agric.*, May-June, 1936 (3489-3492). [F.]
- 633.18-1.81**—Chiappelli, R. Rice manuring in agricultural practice. *G. Riscolt.* 26, 1936 (35-37). [I.]
- 633.18-1.81**—Dennett, J. H. Further pot experiments with padi. *Malay. Agric. J.* 24, 1936 (309-331).
- 633.18-1.81**—Follett-Smith, R. R. Fertilizer investigations with padi. *Agric. J. Brit. Guiana*, 7, 1936 (97-114).
- 633.18-1.81**—Joachim, A. W. R.; Kandiah, S.; Pandittesekere, D. G. Studies on paddy cultivation. VI. The composition of the paddy crop and soil in relation to form of fertilizer and time of application. *Trop. Agricut.* 87, 1936 (156-165).
- 633.18-1.81**—Karai, M. Influence of  $N, P_2O_5$  and  $K_2O$  upon the amount and quality of agricultural products. *J. Sci. Soil Japan* 10, 1936 (25-36). [J.]
- 633.18-1.81**—Wilshaw, R. G. H. Padi manurial and minor cultural trials. *Malay. Agric. J.* 24, 1936 (86-90).
- 633.18-1.81**—Wilshaw, R. G. H. Padi manurial and minor cultural trials. *Malay. Agric. J.* 24, 1936 (618-630).
- 633.18-1.81:581.192**—Soriano, M. F. Influence of amount of fertilizer in soil on growth of rice and composition of its leaves. *Philipp. Agricut.* 23, 1934 (295-316). C.A. 29 (870). B.C.A. 54 (566).
- 633.18-1.81:581.192**—Ichikawa, C. Influence of deficiency of three essential elements of the fertilizer on the yield, ash constituents and nitrogen content of unhulled rice. *J. Agric. Chem. Soc. Japan* 11, 1935 (255-260). C.A. 29 (6688).
- 633.18-1.81:581.192**—Sreenivasan, A. Investigations on the rôle of organic matter in plant nutrition. 9. Effect of manuring on the growth and intake of silicon by dry and wet cultivated rice. *Proc. Indian Acad. Sci.* 3, 1936 (258-277).
- 633.18-1.81:581.192**—Sturgis, M. B.; Reed, J. F. The relation of organic matter and fertilizer to the growth and composition of rice. *J. Amer. Soc. Agron.* 29, 1937 (360-366).
- 633.18-1.811**—Kapp, L. C. Study of relation of growth to nutrition of the rice plant. *Ark. Agric. Expt. Sta. Bull.* 335, 1936, pp. 33.

# BIBLIOGRAPHY OF SOIL SCIENCE

- 633.18-1.811.1—Shibuya, K.; Saeki, H.; Katagi, D. Utilization of nitrate and ammonia nitrogen by plants. II. Dry land rice (*Oryza sativa* Linn). *J. Soc. Trop. Agric. Taiwan* 7, 1935 (277-288). [J.e.]
- 633.18-1.828:546.284—Sreenivasan, A. Investigations on the rôle of silicon in plant nutrition. Part 4. Effect of silicate fertilization on the growth of the rice plant. *Proc. Indian Acad. Sci.* 3 B. 1936 (302-309).
- 633.18-1.84—Thellin, G.; Beaumont, A. B. The effect of some forms of nitrogen on the growth and nitrogen content of wheat and rice plants. *J. Amer. Soc. Agron.* 26, 1934 (1012-1017). E.S.R. 73 (761).
- 633.18-1.84—Chiappelli, R. Fertilizers for rice. *G. Riscolt.* 25, 1935 (131-132). [I.]
- 633.18-1.84—Sen, A. Some field and water culture experiments with rice. *Proc. Nat. Inst. Sci. India*, 3, 1937 (227-230).
- 633.18-1.841—Tin, U. Developmental variation in the paddy grain. *Indian J. Agric. Sci.* 6, 1936 (396-459).
- 633.18-1.85—Ali, D. M. Sheikh-. Phosphoric fertilizers for rice culture. *Agric. Sci. Kazakhstan*, 1-2, 1935 (61-66). [R.e.]
- 633.18-1.85—Haigh, J. C.; Joachim, A. W. R. Studies on paddy cultivation. V. A. The effect of time of application of fertilizer. B. The effect of the form of phosphoric acid applied. *Trop. Agricist.* 85, 1935 (269-277).
- 633.18-1.85—Kapp, L. C. Phosphatic fertilization for rice under submerged conditions. *Proc. Assoc. S. Agric. Workers*, 34th, 35th, 36th Ann. Conv. 1933-35 (73-74). C.A. 30 (2683).
- 633.18-1.854—Ichikawa, C. Manurial effects of guano on rice plants. *J. Agric. Chem. Soc. Japan* 13, 1937 (41-45). B.C.A. 56 (378).
- 633.18-1.855—Ayi, S. Effect of superphosphate dressing on the growth of rice plants of several varieties. *J. Sci. Soil Japan* 9, 1935 (127-148). C.A. 29 (5974).
- 633.18-1.86—Kamatani, E.; Kagiya, K. On the effect of farmyard manure on the growth of paddy rice. *J. Sci. Soil Japan* 11, 1937 (116-131). [J.]
- 633.18-1.874—Misra, R. N. Effect of the decomposition of green manure on the growth and yield of paddy. *Nagpur Agric. Coll. Mag.* 9, 1935 (123-126).
- 633.18-1.874—Bally, W. The employment of green manures in rice growing. *Mo. Bull. Agric. Sci. Pract.* 27, 1936 (107-317).
- 633.18-2-1.432.2—Suzuki, H. On the relation of soil moisture to the development of the rice blast disease, with special reference to the results of inoculation experiments on the resistant and susceptible varieties of the paddy rice and the upland rice. *Forsch. Pflkr. Kyoto*, No. 2, 1933 (78-97). E.S.R. 72 (202).
- 633.18-2-1.432.2—Suzuki, H. On the relation of soil moisture to the development of the blast disease of the rice plant with special reference to the results of inoculation experiments on seedlings and pedicels of spikes of plants grown on soils differing in the time and duration of drying and irrigation. *Forsch. Pflkr. Kyoto*, No. 2, 1933 (176-186). [J.e.]
- 633.18-2-1.432.2—Suzuki, H. On the relation of soil moisture to the development of the blast disease of rice, with special reference

## FERTILIZERS AND GENERAL AGRONOMY

to the inoculation experiments on plants grown on soils differing in moisture and amount of nitrogenous manure. *Forsch. PflKr. Kyoto*, No. 2, 1933 (279-282). [J.e.]

**633.18-2-1.432.2—Kirichenko, K. S.** The chemistry of the Kuban river "plavny" soils in relation to dying off of rice after rice. *Trudy Tsent. Sta. Ris. Khez*, 1934 (3-25). *Pedology*, 1935 (813). [R.]

**633.18-2-1.432.2—Suzuki, H.** Studies on the influence of some environmental factors on the susceptibility of the rice plant to blast and Helminthosporium diseases, and on the anatomical characters of the plant. Influence of differences in soil moisture. *J. Coll. Agric. Tokyo*, 13, 1934 (45-108). E.S.R. 74 (221).

**633.18-2-1.432.2-1.436—Abe, T.** On the influence of soil temperature upon the development of the blast disease of rice. *Forsch. PflKr. Kyoto*, No. 2, 1933 (30-54). E.S.R. 72 (201).

**633.18-2-1.432.2-1.436—Seto, F.** The varying response of rice seedlings to attack by the "bakanae" disease. *Forsch. PflKr. Kyoto*, No. 2, 1933 (20-29). E.S.R. 72 (201).

**633.18-2-1.432.2-1.436—Seto, F.** Investigations on the "bakanae" disease of the rice plant, III. IV. *Forsch. PflKr. Kyoto*, No. 2, 1933 (125-153). E.S.R. 72 (200).

**633.18-2-1.432.2-1.81—Suzuki, H.** Studies on the influence of some environmental factors on the susceptibility of the rice plant to blast and Helminthosporium diseases and on the anatomical characters of the plant. II. Influence of differences in soil moisture and in the amount of nitrogenous fertilizer given. III. Influence of differences in soil moisture and in the amounts of fertilizer and silica given. *J. Coll. Agric. Tokyo*, 13, 1935 (237-275, 277-331).

**633.18-2.19-1.811.1—Kuulman, L. W.** The investigation on the "mentek" disease of rice. *Landbouw*, 11, 1935 36 (77-113). [Du.e.]

**633.18-2.19-1.811.3—Kuulman, L. W.** Symptoms of the "mentek" disease of the rice plant. *Landbouw*, 12, 1936 (225-245). R.A.M. 16 (339). [Du.e.]

**633.18-2.4—Wei, C. T.** Rhizoctonia, sheath blight of rice. *Bull. Coll. Agric. Forest. Univ. Nanking*, 15, 1934, pp. 20. B.C.A. 54 (822).

### 633.2/3 GRASSES, FORAGE, HERBAGE, LEGUMES

**633.2/3 : 546.27—Bertrand, G. ; Silberstein, L.** New determinations of the boron content of plants cultivated on the same soil. *C.R.* 204, 1937 (1019-1021). *C.R. Acad. Agric.* 23, 1937 (454-456). *Ann. Agron.* 7 (n.s.), 1937 (505-507). [F.]

**633.2/3 : 581.144.2—Könekamp, A.** The root development of some clovers and grasses. *Ernähr. Pflanze* 31, 1935 (103-108). [G.]

**633.2/3-1.4—Moodie, A. W. S.** Pasture plants. *Agric. Gaz. N.S. Wales*, 48, 1937 (421-422, 430).

**633.2/3-1.4 : 581.192—Edin, H. ; Berglund, N. ; Andersson, Y.** Investigations concerning green fodder and methods for its conservation. *Kgl. Landtbr.Akad. Handl. Tidskr.* 72, 1933 (297-392). [Sw.e.]

**633.2/3-1.4 : 581.192—Herzig, J.** Mineral nutrients in home produced forage. *Čsl. Zeměd.* 17, 1935 (241-242). *Herb. Abs.* 6 (3).

## BIBLIOGRAPHY OF SOIL SCIENCE

633.2/3-1.4 : 581.192—Midgley, A. R. Modification of chemical composition of pasture plants by soils. *J. Amer. Soc. Agron.* 29, 1937 (498-503).

633.2/3-1.415.1—Davies, R. O.; Chippindale, H. G. The response of grasses and clover to treatment of acidic upland soils, and the effect of herbage plants on the reaction of acidic soils. II. The effect of herbage plants on Molinia soil. *Emp. J. Expt. Agric.* 3, 1935 (50-59).

633.2/3-1.415.1 : 581.192—Kauter, A. The ash content of hay grass in relation to botanical composition and soil reaction. *Landw. Jahrb. Schweiz.* 49, 1935 (69-86). [G.f.]

633.2/3-1.415.1 : 581.192—Nehring, K. The influence of reaction and fertilizing on the composition and digestibility of meadow grass. I. The influence of reaction. *Bied. Zbl. B. Tierernähr.* 7, 1935 (444-462). C.A. 30 (580).

633.2/3-1.547.1—Trumble, H. C. Some factors affecting the germination and growth of herbage plants in South Australia. *J. Dept. Agric. S. Aust.* 40, 1937 (779-786).

633.2/3-1.586—Leggieri, L. The production of fodder crops in a dry, continental climate. *Sixteenth Int. Cong. Agric. Sect. 4, Theme No. 2, 1934*, pp. 5. *Herb. Abs.* 5 (46). [F.]

633.2/3-1.586—Roganović, B. The production of forage in a dry, continental extreme climate. *Sixteenth Int. Cong. Agric. Sect. 4, Theme No. 1, 1934*, pp. 8. *Herb. Abs.* 5 (46). [F.]

633.2/3-1.586—Surányi, J. The production of forage under a dry, continental, extreme climate. *Sixteenth Int. Cong. Agric. Sect. 4, Theme No. 1, 1934*, pp. 4. *Herb. Abs.* 5 (46). [F.]

633.2/3-1.586—Kirk, L. E. Forage-crop production in dryland agriculture and on ranges in western Canada. *Emp. J. Expt. Agric.* 3, 1935 (320-330). *Biol. Abs.* 10 (2295).

633.2/3-1.586—Arnold, H. C. Dry land pasture grass investigations. *Rhod. Agric. J.* 33, 1936 (236-242).

633.2/3-1.586—Enlow, C. R. Regrassing the semi-arid plains. *Soil Conservation*, 1, No. 7, 1936 (11-13).

633.2/3-1.81—Jones, L. I. Reaction of sheep (live-weight increase) to different species and strains of grasses and clovers: yield and other characteristics of species. *Welsh Pl. Br. Sta. Bull.* 13, 1932 (95-121). B.C.A. 54 (118).

633.2/3-1.81—Tommasi, G. Intensive manuring of fodder crops. *Ann. Sta. Chim.-Agrar. Roma*, 14, II, No. 203, 1933, pp. 23. B.C.A. 54 (1110).

633.2/3-1.81—Freckmann, W. The influence of weather and manuring on the development of clover-grass mixtures. *Rept. Third Grassland Conf. Zurich, 1934* (75-81). *Herb. Abs.* 5 (22). [G.e.]

633.2/3-1.81—Nilsson-Leissner, G. Results of combined variety and manurial trials with pasture and meadow plants. *Rept. Third Grassland Conf. Zurich, 1934* (96-106). *Herb. Abs.* 5 (24). [G.e.]

633.2/3-1.81—Schmitt, L. Methods of producing fodder on the farm. *Ernähr. Pflanze*, 32, 1936 (162-165). [G.e.]

633.2/3-1.81 : 581.192—Eckstein, O. Alteration in the mineral composition of meadow and pasture plants under the influence of different manurial treatment. *Rept. Third Grassland Conf. Zurich, 1934* (106-117). *Herb. Abs.* 5 (11). [G.e.]

## FERTILIZERS AND GENERAL AGRONOMY

- 633.2/3-1.81 : 581.192**—Werner, A. Mineral content of German feeding-stuffs and the effect of manuring and of origin thereon. *Landw. VersSta.* 121, 1934 (223-280). B.C.A. 54 (285). [G.]
- 633.2/3-1.81 : 581.192**—Witteveen, H. J. Some lime and phosphate contents of crops on Friesian grassland field plots. *Landbouwk. Tijdschr.* 46, 1931 (91-96). Z.P.D. 38 (251). [Du.]
- 633.2/3-1.81 : 581.192**—Bal, D. V.; Athawale, C. R. Effect of manuring and stage of maturity on yield and mineral composition of pasture grass and their bearing on the mineral requirements of cattle of the Central Provinces. *Nagpur Univ. J.* No. 1, 1935 (11-27). B.C.A. 56 (710).
- 633.2/3-1.81 : 581.192**—Crampton, E. W.; Finlayson, D. A. Pasture studies. VII. The effect of fertilization on the nutritive value of pasture grass. *Emp. J. Expt. Agric.* 3, 1935 (331-345).
- 633.2/3-1.81 : 581.192**—Stöckli, A. The protein and mineral content of hay grasses in relation to lime and phosphate supply of the soil. *Schweiz. Landw. Monatsh.* 13, 1935, pp. 22. [G.]
- 633.2/3-1.81 : 581.192**—Taylor, A. J. Effect of fertilizers on the composition of grasses. *Farm. S. Africa*, 10, 1935 (40).
- 633.2/3-1.81 : 581.192**—Bennett, E. A comparison of the chemical composition of pasture grass with a mixed concentrate. *J. Dairy Sci.* 19, 1936 (623-629). E.S.R. 76 (517).
- 633.2/3-1.81 : 581.192**—Boulenaz, A. Influence of phosphate-potash manuring on the quality of fodder of natural grassland. *Landw. Jahrb. Schweiz*, 5, 1936 (526-543). [F.g.]
- 633.2/3-1.81 : 581.192**—Efimov. The enrichment of fodder through the use of mineral fertilizers. *Probl. Zhivotnov.* No. 3, 1936 (45-56). C.A. 30 (4971). [R.e.]
- 633.2/3-1.81 : 581.192**—Ellis, J. H.; Caldwell, O. G. Mineral content of Manitoba hays. *Sci. Agric.* 16, 1936 (521-537).
- 633.2/3-1.81 : 581.192**—König, F. The effect of manuring on the protein of permanent grassland. *ForschDienst.* 2, 1936 (608-615). [G.]
- 633.2/3-1.81 : 581.192**—Vinall, H. N.; Wilkins, H. L. The effect of fertilizer applications on the composition of pasture grasses. *J. Amer. Soc. Agron.* 28, 1936 (562-569).
- 633.2/3-1.81 : 581.192**—Wassmann, F. The mineral content of German fodders and the influence of manuring and origin. *Landw. VersSta.* 126, 1936 (226-295). [G.]
- 633.2/3-1.81 : 581.192**—Wolff, H. The mineral content of German fodders as influenced by manuring and origin. *Landw. VersSta.* 124, 1936 (153-240). [G.]
- 633.2/3-1.81 : 581.192**—Johnstone-Wallace, D. B. The influence of grazing management and plant associations on the chemical composition of pasture plants. *J. Amer. Soc. Agron.* 29, 1937 (441-455).
- 633.2/3-1.81 : 581.192**—Lesch, W. The influence of mineral fertilizing on the mineral content of agricultural crops. *ForschDienst.* 3, 1937 (341-345). [G.]
- 633.2/3-1.81 : 581.192**—Nilsson-Leissner, G. Influence of manuring on the quality of the fodder from leys. *Scensk Land*, 21, 1937 (150-151). *Herb. Abs.* 7 (266).
- 633.2/3-1.81 : 581.192**—Pierre, W. H.; Robinson, R. R. The calcium and phosphorus content of pasture herbage and of



# BIBLIOGRAPHY OF SOIL SCIENCE

various pasture species as affected by fertilization and liming.

*Amer. Soc. Agron.* 29, 1937 (477-497).

633.2/3-1.81:581.192—Stälé, J. A study of the effect of phosphatic and potassic fertilizers on the mineral composition of hay from natural meadows. *Landw. Jahrb. Schweiz.* 4, 1937 (418-430). [F.g.]

633.2/3-1.811—Cepikova, A. R. Manurial requirements of meadow plants. *Trudy Inst. Kormov.* No. 2, 1934 (54-77). *Herb. Abs.* 5 (258).

633.2/3-1.811.3—Truninger, E.; Grünigen, F. v. On the mineral matter content of the more important meadow plants with special reference to potassium as plant nutrient for meadows. *Landw. Jahrb. Schweiz.* 2, 1935 (101-127). [G.f.]

633.2/3-1.811.3—Valentin, M. J. Potassium in the nutrition of crop plants. Six years' experimentation in the Lion d'Angers "Dutch system" experiment held. *Vie Agric. Kur.* No. 2, 1937 (71-76). *Herb. Abs.* 7 (269).

633.2/3-1.811.91—Ehrenberg, P. What is the significance of increased protein production from our specialized husbandry with regard to the demands of the moisture economy of our soils? *Ztschr. Pflanz. Dung.* 37, 1935 (315-340). [G.]

633.2/3-1.821.1 Romashev, P. I.; Mikhailov, M. M. Response of perennial meadow plants to liming. *Trudy Inst. Kormov.* No. 2, 1934 (94-107). *Herb. Abs.* 6 (70).

633.2/3-1.83:581.192—König, F. The influence of potash fertilizing on the value of farm fodder. *Landw. Jahrb.* 81, 1935 (829-889). [G.]

633.2/3-1.83:581.192—König, F. The influence of potash manuring on the value and effect of fodder. *Ernähr. Pflanz.* 32, 1936 (21-27). [G.]

633.2/3-1.83:581.192—La Potasse. Influence of potassic manuring on the nutritive value of fodder. *Potasse.* No. 88, 1936 (21-24).

633.2/3-1.83:581.192—Salgues, R. Increase of the amount of carbohydrates in forage grasses after potassium manuring. *Bull. Assoc. Franç. Ét. Sol* 3, 1937 (139-145). [F.]

633.2/3-1.84—Nilsson-Leissner, G. Results of nitrogen fertilization to forage crops and their dependence upon environmental factors. *Nord. JordbrForsk.* 7-8, 1936 (356-367). [Sw.e.]

633.2/3-1.84:581.192—Fagan, T. W. Influence of nitrogen fertilizers on the chemical composition of the produce of individual grasses as pasture, hay, and aftermath. *Welsh Pl. Br. Sta. Bull.* 13, 1932 (80-94). B.C.A. 54 (117).

633.2/3-1.84:581.192—Demelon, J.; Brada, L. Nitrogen fertilizing in relation to protein content of grasses. *Cd. ZentÉd.* 16, 1934 (349-351, 356-366). *Herb. Abs.* 4 (258).

633.2-1.44:581.192—Daniel, H. A.; Harper, H. J. The relation between total calcium and phosphorus in mature prairie grass and available plant food in the soil. *J. Amer. Soc. Agron.* 26, 1934 (986-992).

633.2-1.44:581.192—Edwards, D. W.; Goff, R. A. Factors affecting the chemical composition of pasture grasses. *Hawai Agric. Expt. Sta. Bull.* 76, 1935, pp. 31.

## FERTILIZERS AND GENERAL AGRONOMY

- 633.2-1.44 : 581.192**—Henrici, M. The chemical composition of grass veld. *Farm. S. Africa*, 10, 1935 (346-348). *Herb. Abs.* 6 (4).
- 633.2-1.44 : 581.192**—Iyer, A. Viswanatha. Minerals in pasture grasses in India. *Indian J. Vet. Sci.* 5, 1935 (184-190).
- 633.2-1.44 : 581.192**—Itallie, T. B. v. The influence of different factors (time of mowing, botanical composition, fertilizer treatment and soil-type) on the chemical composition of grass. *Landbouwk. Tijdschr.* 49, 1937 (155-170). [Du.e.]
- 633.2-1.81 : 541.144.2**—Klecka, A.; Fabian, J. The cause of fluctuation in meadows and meadow stock. *Zem. Arch.* 80, 1932. Z.P.D. 13B (517).
- 633.2-1.811.1**—Eggleton, W. G. E. The assimilation of inorganic nitrogenous salts, including sodium nitrate, by the grass plant. *Biochem. J.* 29, 1935 (1389-1397). *Herb. Abs.* 5 (271).
- 633.2-1.84**—Nilsson-Leissner, G. Experiments in nitrogenous manuring of seed plots of red fescue and smooth-stalked meadow grass. *Scensk Frotidn.* 6, 1937 (29-31). *Herb. Abs.* 7 (179).
- 633.2-1.893.14**—Evans, G. Seed yields of pedigree and commercial grass strains. *Welsh J. Agric.* 10, 1934 (131-142). C.A. 89 (1199).
- 633.2.03 : 551.577**—Trumble, H. C.; Cornish, E. A. The influence of rainfall on the yield of a natural pasture. *Aust. J. Connc. Sci. Indust. Res.* 9, 1936 (19-28).
- 633.2.03 : 632.557.1**—Klapp, E. The control of rushes in permanent pastures. *Deut. Landw. Pr.* 60, 1933 (109). *Herb. Abs.* 4 (113).
- 633.2.03 : 633.3**—Fergus, E. N. The place of legumes in pasture production. *J. Amer. Soc. Agron.* 21, 1935 (367-373).
- 633.2.03-1.4 : 634**—Wahlen, F. T.; Glisiger, L. The influence of fruit trees on the height and quality of meadowland and the nutrient status of meadow soils. *Landw. Jahrb. Schweiz* 3, 1937 (276-296). G.
- 633.2.03-1.4 : 636.084.22**—Koperzhinsky, V. Changes in the properties of meadow soils when utilized for pasture. *Pedology*, No. 5, 1936 (719-731). [R.g.]
- 633.2.03-1.411.1-1.81**—Sundelin, G. Manuring of hay leys on sandy soil. *Scenskt Land* 19, 1935 (149-150). *Herb. Abs.* 5 (196).
- 633.2.03-1.411.4**—Bauman, A. Practical points of view regarding the cultivation of meadow plants on peat lands. *Scenska MosskFören. Tidskr.* 51, 1937 (155-159). *Herb. Abs.* 7 (252).
- 633.2.03-1.411.4**—Lundblad, K. Sowing of hay leys on peat soils. Results of an experiment at Sörbyn. *Scenska MosskFören. Tidskr.* 51, 1937 (387-403). Sw.e.]
- 633.2.03-1.411.4-1.81**—Klecka, A.; Fabian, J. The improvement of meadows on the decomposed peat lands of the Labe Valley. *Zem. Arch.* 25, 1934 (129-140). *Herb. Abs.* 4 (255).
- 633.2.03-1.411.4-1.81**—Bauman, A. Pastures on peat soils. *Scenska MosskFören. Tidskr.* 49, 1935 (195-208). Sw.]
- 633.2.03-1.411.4-1.81**—Brüne, F. Recent experience in the field of moor and heathland cultivation. *Deut. LandeskZtg.* 4A, No. 2, 1935 (13-23). *Herb. Abs.* 5 (307).
- 633.2.03-1.411.4-1.81**—Lundblad, K. Hay cultivation on peat soils. *Scenska MosskFören. Tidskr.* 49, 1935 (5-16). Sw.]

## BIBLIOGRAPHY OF SOIL SCIENCE

- 633.2.03-1.411.4-1.81**—Osvold, H. Experiments with increasing amounts of potash and phosphate at Gusselås. *Svenska Mossk-Fören. Tidskr.* 49, 1935 (17-28). [Sw.]
- 633.2.03-1.411.4-1.81**—Thelen. Manuring high moor grassland. *Mitt. Landw.* 50, 1935 (357-358). *Herb. Abs.* 5 (196). [G.]
- 633.2.03-1.411.4-1.81**—Vaggeler. Yields and manuring on moor meadows. *Georgica*, 112, 1935 (1069). *ForschDienst.* 1 (312). [G.]
- 633.2.03-1.411.4-1.81**—Lundblad, K. Transformation of a Scirpus-carex bog to grassland without soil cultivation or seeding. *Svenska Mossk-Fören. Tidskr.* 51, 1937 (45-66). [Sw.]
- 633.2.03-1.411.4-1.83**—Brüne, F. On the potash manuring of meadows on peat soils. *Ernähr. Pflanze* 31, 1935 (218-220). [G.]
- 633.2.03-1.411.4-1.83**—Husemann, C. The potash requirements of old meadows on peat (Hochmoor) soils. *Ernähr. Pflanze* 31, 1935 (1-3). [G.]
- 633.2.03-1.411.4-1.83**—Konrads, P. The influence of manuring, especially of potash manuring on the botanical composition of the flora of meadows on cultivated peat soils. *Ernähr. Pflanze* 32, 1936 (194-197). [G.]
- 633.2.03-1.411.4-1.85**—Nehring, K. The phosphatic fertilizing of meadows on peat. *Phosphorsäure* 5, 1935 (641-656). [G.]
- 633.2.03-1.415.1**—Blair, A. W.; Prince, A. L.; Winterberg, S. H. Influence of soil reaction, pH, on the yield and feeding value of hay. *N. J. Agric. Expt. Sta. Bull.* 586, 1935 (1-8). U.S.A. 29 (8207).
- 633.2.03-1.415.2:619**—Svanberg, O. Agricultural chemical factors causing anaemic conditions localized in northern Sweden. *LandbrHögsk. Ann.* 1, 1933 1934 (209-250). *Herb. Abs.* 5 (11). [Sw.]
- 633.2.03-1.415.2:619**—Svanberg, O.; Hannerz, E.; Wijkström, T. Analyses of pasture from acid soils in Northern Sweden (district of Norrbotten). *LandbrHögsk. Ann.* 2, 1935 (31-50). [Sw.]
- 633.2.03-1.415.2-1.81**—Davies, R. O.; Milton, W. E. J. Responses of grasses and clover to treatment on acidic upland soils, and the effect of herbage plants on the reaction of acid soils. Part III. A comparison of the produce of Molinia and fescue soils. *Emp. J. Expt. Agric.* 5, 1937 (48-62).
- 633.2.03-1.416:581.5**—Wiśniowski, Z. Composition of the flora and certain chemical properties of pasture soils of Wojewódzka Krakau. *Roczn. Nauk Roln.* 34, 1934 (287-328). B.C.A. 56 (597). [Pl.]
- 633.2.03-1.416.1**—Eggleton, W. G. The nitrogen status of grassland soil. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (216-217).
- 633.2.03-1.416.1**—Richardson, H. L. The nitrogen cycle in grassland soils. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (219-221).
- 633.2.03-1.416.1-1.81**—Dorsey, H.; Brown, B. A. Pasture investigations, seasonal variations in the reaction, nitrates and ammonia of soil from differently fertilized permanent pastures. *Conn. Agric. Expt. Sta. Bull.* 206, 1935 (3-30). U.S.A. 30 (5707).
- 633.2.03-1.416.2**—Wrenshall, C. L. Studies of the element phosphorus in pasture soils. *Soils Group Pap. C.S.T.A.* July, 1936. *Sci. Agric.* 17, 1937 (462).

# FERTILIZERS AND GENERAL AGRONOMY

**633.2.03-1.421—Nilsson-Leissner, G.** Is an improvement of local manurial trials with meadow plants possible? *Svensk. Förlidn.* 4, 1935 (55-57). *Herb. Abs.* 5 (53).

**633.2.03-1.421—Robinson, R. R.; Pierre, W. H.; Ackerman, R. A.** A comparison of grazing and clipping for determining the response of permanent pastures to fertilization. *J. Amer. Soc. Agron.* 29, 1937 (349-359).

**633.2.03-1.43—Klitzsch, C.** The breaking up of grassland from the standpoint of soil physics. *Pflanzenbau.* 9, 1933 (216-228, 262-273). *Bied. Zbl.* 64 (99). [G.]

**633.2.03-1.44 Nelson, A. P.** The relation of soil character, as expressed by certain soil types to the choice of land for grazing in the mixed prairie of North Dakota. *Amer. Soil. Surv. Bull.* 17, 1936 (77-78).

**633.2.03-1.445.51 Orlovsky, N. V.** The problem of grassland in dry regions. I. Natural leys on a solonchous dark chestnut soil. *Khim. Sotsial. Zemled.* No. 5, 1935 (61-69). [R.]

**633.2.03-1.467 Frenzel, G.** The animal world in grassland soil. *Jahresber. Schloß-Ges. Vaterl. Cult.* 108, 1935 (90-92). *Herb. Abs.* 7 (95).

**633.2.03-1.531.2 Jacob, E.** Experimental investigations on the sowing of grasses. *Landw. VersSta.* 121, 1934 (281-344). [G.]

**633.2.03-1.58 Oldershaw, A. W.** Thirty years of grassland experiments at Saxmundham, Suffolk. *J. Roy. Agric. Soc.* 95, 1934 (18-33). [J.H.B. 4 (185)].

**633.2.03-1.58 Frankena, H. J.** Some results of modern grassland study. *Landbouwk. Tijdschr.* 47, 1935 (749-754). *Herb. Abs.* 6 (167). [Du.]

**633.2.03-1.58 Burlison, W. L.; Rusk, H. P.; Pieper, J. J.** Pasture improvement and management. III. *Agric. Expt. Sta. Circ.* 465, 1936, pp. 50.

**633.2.03-1.58 Ehrenberg, P.** A summary of theoretical considerations of modern fertilizing, management and utilization of grassland. *Ztschr. Pflanz. Düng.* 42, 1936 (42-93). [G.]

**633.2.03-1.58 Falzoni, E. A.** Natural grasslands. *Rel. Min. Agric. Rio de J.* 25, 1936 (91-114). *Herb. Abs.* 7 (93).

**633.2.03-1.58 Jenkins, J. M.** Permanent pastures for cattle production in the rice area of south-western Louisiana. *La. Agric. Expt. Sta. Bull.* 276, 1936, pp. 7. *Herb. Abs.* 7 (97).

**633.2.03-1.58 Charpentier, C. A. G.** Investigations concerning the preparation and utilization of cultivated pastures during 1927-1936. *Valt. Maat. Juk.* 88, 1937, pp. 146. [Fie.]

**633.2.03-1.58 Elting, E. C.; LaMaster, J. P.; Mitchell, J. H.** Permanent pasture studies. *S.C. Agric. Expt. Sta. Bull.* 308, 1937, pp. 54.

**633.2.03-1.58 Frankena, H. J.** Modern grassland research. *Landbouwk. Tijdschr.* 49, 1937 (204-212). [Du.e.]

**633.2.03-1.58 Rowland, J. W.** Grazing management. *S. Africa Dept. Agric. Bull.* 168, 1937, pp. 26. B. 1. 1. 35 (253).

**633.2.03-1.58 Winders, C. W.** Sown pastures and their management. *Queensland Agric. J.* 48, 1937 (6-15).

**633.2.03-1.58 Winders, C. W.** Sown pastures and their management. (Continued.) *Queensland Agric. J.* 48, 1937 (119-135).

# BIBLIOGRAPHY OF SOIL SCIENCE

**633.2.03-1.583**—Hein, M. A.; Vinall, H. N. Persistence of grass and legume species under grazing conditions. *J. Amer. Soc. Agron.* 25, 1933 (595-602).

**633.2.03-1.583**—Leukel, W. A.; Camp, J. P.; Coleman, J. M. Effect of frequent cutting and nitrate fertilization on the growth behaviour and relative composition of pasture grasses. *Fla. Agric. Expt. Sta. Bull.* 269, 1934. pp. 48.

**633.2.03-1.583**—Gernert, W. B. Native grass behaviour as affected by periodic clipping. *J. Amer. Soc. Agron.* 28, 1936 (447-456). *C.A.* 30 (5347).

**633.2.03-1.583**—Thomas, B.; Hope, R. The effect of intensive treatment on the yield and quality of grass from an exposed boulder clay pasture. *J. Soc. Chem. Indust.* 55, 1936 (1467-1511).

**633.2.03-1.583**—Drew, J. P. An investigation into the intensive system of grassland management. *J. Dept. Agric. T.F.S.* 34, 1937 (225-247).

**633.2.03-1.583**—Greenhill, A. W. The chemical composition of intensively managed pasture. Further investigations in 1930 and 1931 with summary of data obtained from 1926-1931. *J. Soc. Chem. Indust.* 56, 1937 (377-397).

**633.2.03-1.583**—677.31—Hall, T. D.; Moses, D. Intensive grazing on veld. III. The rôle of intensive management in wool production in the Eastern Transvaal. *S. Afric. J. Sci.* 32, 1935 (205-222).

**633.2.03-1.589**—Aldous, A. E. Effect of burning on Kansas bluestem pastures. *Kans. Agric. Expt. Sta. Tech. Bull.* 38, 1934. pp. 65. *E.S.R.* 73 (33).

**633.2.03-1.589**—Weaver, J. E. Rôle of fire in pasture management. *Ecology* 16, 1935 (651-654). *Herb. Abs.* 6 (78).

**633.2.03-1.67**—Brouwer, W. The application of artificial watering to grassland. *Rept. Third Grassland Conf. Zurich*, 1934 (89-95). *Herb. Abs.* 5 (29). *G.C.*

**633.2.03-1.67**—Bartels, L. G. Irrigated pastures. Intensive grazing tests with sheep. *J. Dept. Agric. Victoria*, 33, 1935 (262-266, 271).

**633.2.03-1.67**—Beruldsen, E. T.; Morgan, A. Irrigated pastures. Rate and frequency of watering tests. *J. Dept. Agric. Victoria*, 33, 1935 (67-74).

**633.2.03-1.67**—Smith, L. J.; Grunder, M. S.; Gaver, H. L. Pasture irrigation. *Wash. Agric. Expt. Sta. Bull.* 313, 1935. pp. 28.

**633.2.03-1.67**—Heddie, R. G.; Ogg, W. G. Irrigation experiments on a Scottish hill pasture. *J. Ecol.* 24, 1936 (220-241). *Herb. Abs.* 6 (144).

**633.2.03-1.67**—Schumacher. Results of irrigation tests at the siegerländer irrigated meadow in 1935. *Kulturt. 39*, 1936 (40-57).

**633.2.03-1.67**—Surányi, F. Recent information on the watered meadow on alkaline soil at Békéscsaba. *Közlel. 46*, 1936 (154-155). *Herb. Abs.* 6 (167). *H.*

**633.2.03-1.67**—581.144.2—Kampgath, J. The influence of irrigation on the root development of different grasses. *Thesis Landw. Hochschule, Berlin*, 1933. *Z.P.D.* 37 (114).

**633.2.03-1.67-1.81**—Long, J.; Pradon, R. Manurial trials on meadowland at the National Experiment Centre, Merle, 1929-1933. *Off. Rtg. Agric. Midi*, No. 50, 1934. *Herb. Abs.* 5 (196).

## FERTILIZERS AND GENERAL AGRONOMY

- 633.2.03-1.67-1.81—Greenhill, A. W.** The effect of irrigation on the response of grassland to fertilizers. *Trans. 3rd. Int. Cong. Soil Sci.* 1, 1935 (256-258).
- 633.2.03-1.81—Foss, H.** Experiments with hay plants and meadow cultivation. *Meld. Stat. Forsøkssta. Fjellbygdene*, 16, 1933 (111-63). *Herb. Abs.* 5 (52). [N.]
- 633.2.03-1.81—Crampton, E. W.; Raymond, L. C.** Fertilization of permanent pastures for steer grazing. Pastures studies 111. *Macdonald Coll. Tech. Bull.* 13, 1934, pp. 31. *Herb. Abs.* 4 (255).
- 633.2.03-1.81—Fromme, F. D.** Fertilizing meadows. *W. Va. Agric. Expt. Sta. Bull.* 263, 1934 (17). *Z.P.D.* 43 (235).
- 633.2.03-1.81—Laestadius, R.** Manurial trial on a ley on moss peat very deficient in phosphates. *Svenskt Land* 18, 1934 (359). *Herb. Abs.* 4 (257).
- 633.2.03-1.81—Lush, R. H.; Fletcher, J. L.** Pasture fertilization results. *J. Dairy Sci.* 17, 1934 (733-735). *C.A.* 29 (5975).
- 633.2.03-1.81—Onosko, B. D.** Manurial requirements of meadow and marsh soils. *Trudy Inst. Kormov.* No. 2, 1934 (3-53). *Herb. Abs.* 6 (54).
- 633.2.03-1.81—Page, H. J.** The influence of manuring and other factors on the productivity of pastures. *Rept. Third Grassland Conf. Zurich*, 1934 (65-75). *Herb. Abs.* 5 (37).
- 633.2.03-1.81—Sprague, H. B.; Farris, N. F.; Cathcart, C. S.** Improving pastures in New Jersey. *N.J. Agric. Expt. Sta. Bull.* 564, 1934, pp. 47. *B.C.A.* 54 (245).
- 633.2.03-1.81—Thurwald, A.; Schwansee, K.** A pasture fertilizing experiment of the Attvater-pasture Co-operative Association at Gr. Ullersdorf. *Landw. Fachpresse Tschech.* 12, 1934 (231-232). *Herb. Abs.* 4 (255).
- 633.2.03-1.81—Wacker, F. W.** Meadows and meadow plants in Central Germany. V. The behaviour of plants in meadows under different manurial treatment and with different nutrient content. *Pflanzenbau* 11, 1934 (1-24). *Herb. Abs.* 4 (254).
- 633.2.03-1.81—Andrés, J. A.** The manuring of grassland. *Agricultura, Madrid*, 7, 1935 (483-484). *Herb. Abs.* 5 (197).
- 633.2.03-1.81—Beaumont, A. B.; Donaldson, R. W.; Snell, M. E.** The effect of fertilizers on the longevity of mowings. *Mass. Agric. Expt. Sta. Bull.* 322, 1935, pp. 8.
- 633.2.03-1.81—Brada, L.; Dornela, J.** Rejuvenation of meadows. *Čsl. Zool.* 17, 1935 (322-324). *Herb. Abs.* 6 (73).
- 633.2.03-1.81—Fernández-Casariégo, L. S.** The influence of manuring on the yield and botanical composition of meadows and pastures in Spain with special reference to the action of potash salts. *Ernähr. Pflanze*, 31, 1935 (366-369). [G.e.]
- 633.2.03-1.81—Foss, H.** Results of meadow manuring with special reference to nitrogen in an inland climate. *Nord. Jordbr.-Forsk.* 5-7, 1935 (809-819). [N.]
- 633.2.03-1.81—Gardner, F. D.; Bechdel, S. I. et al.** Pasture fertilization. *Pa. Agric. Expt. Sta. Bull.* 323, 1935, pp. 24.
- 633.2.03-1.81—Geith, R.** Pasture yields and pasture management. *Mitt. Landw.* 50, 1935 (611-612). *J.H.B.* 4 (313). [G.]
- 633.2.03-1.81—Kloepfel, R.** Report on continuous pasture yield records in East Prussia. *Ztschr. Pflanz. Düng.* 40, 1935 (200-215). [G.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- 633.2.03-1.81—Kuhnert.** Artificial and farmyard manuring of meadows. *Deut. Landw. Pr.* 62, 1935 (162). Z.P.D. 41 (377). [G.]
- 633.2.03-1.81—Maisei, H. J.** Necessity, kind, and amount of nutrient additions, as artificial fertilizers, for meadows and pastures. *Das Superphosphat* 11, 1935 (18-21). B.C.A. 55 (1115).
- 633.2.03-1.81—Maw, G. L.** Fertilizers for pasture. *Derbysh. Fmr.* 15, 1935 (42-45).
- 633.2.03-1.81—Mayton, E. L.** Permanent pasture studies on upland soils. *Ala. Agric. Expt. Sta. Bull.* 243, 1935, pp. 26.
- 633.2.03-1.81—Piötze, K.** The influence of manuring on the herbage of permanent grassland. *Verlagsgesellschaft für Ackerbau m.b.H.* 1935. J.H.R. 4 (246). [G.]
- 633.2.03-1.81—Pollinger, T.** New viewpoints on grassland management in the light of the Third International Grassland Congress at Zurich. *Phosphorsäure*, 5, 1935 (328-340). [G.]
- 633.2.03-1.81—Reinius, R. J.** On the annual manuring of pasture leys. *Landmannen* 17, 1935 (105-106). *Herb. Abs.* 5 (197).
- 633.2.03-1.81—Askew, H. O.; Stanton, D. J.** Effect of annual applications of sulphate of ammonia and sulphate of potash on yield of a phosphated pasture. *N.Z. J. Agric.* 53, 1936 (219-222).
- 633.2.03-1.81—Brown, B. A.; Munsell, R. I.** Pasture investigations. VIII. Modifying the seasonal growth habits of grasses. *Conn. (Storrs) Agric. Expt. Sta. Bull.* 208, 1936 (3-22). C.A. 30 (7265).
- 633.2.03-1.81—Frankena, H. J.** Lectures on modern grassland husbandry. *Rijkslandbouwschool, Akker en Weidebouw Groningen*, 1936 pp. 110. [Du.]
- 633.2.03-1.81—Klečka, A.; Malis, O.** Relation between grass mixtures and fertilizing and their effect on pasture. *Stroj. Čsl. Akad. Zprávy* 11, 1936 (360-365). [Cz.]
- 633.2.03-1.81—Manell, E.** Studies of the effect of fertilizers on clover-grass leys. *Midd. Cent. Aust. Fors. Soc. Jour.* No. 465, 1936, pp. 56. *Kgl. Landbr. Und. Handl. Ind.-Ar.* No. 4, 1936 (385-438). [Sw.]
- 633.2.03-1.81—Picináfské Zprávy.** Care of grass cultures in the autumn. *Picináfské Zprávy*, 2, 1936 (3). *Herb. Abs.* 6 (294).
- 633.2.03-1.81—Schmitt, L.** Soil sampling in pastures and meadows. *Landw. Jahrb.* 83, 1936 (435-455). C.A. 31 (495). [G.]
- 633.2.03-1.81—Thomann, W.; Lutz, J.; Kaegi, F.** Results of a six years mountain meadow manuring experiment. *Schweiz. Landw. Monatsh.* 14, 1936 (115-124). *ForschDienst* 1 (958).
- 633.2.03-1.81—Thomas, M. T.** The introduction and maintenance of nutritious and palatable species and strains. *Welsh Pl. Br. Sta. Sci. H.* No. 14, 1936 (4-57).
- 633.2.03-1.81—Tschumi, L.; Stalé, J.** Observations made on Alpine pastures. Action of some fertilizers. *Landw. Jahrb. Schweiz* 5, 1936 (509-525). [G.]
- 633.2.03-1.81—Twentyman, R. L.** Improving Victoria's pastures. *J. Dept. Agric. Victoria*, 34, 1936 (1-4, 18).
- 633.2.03-1.81—Tyson, J.** Fertilization of timothy meadows in the Upper Peninsula. *Mich. Agric. Expt. Sta. Quart. Bull.* 19, 1936 (29-36).

## FERTILIZERS AND GENERAL AGRONOMY

- 633.2.03-1.81**—**Diener, O.** More wool by manuring sheep pastures. *Ernähr. Pflanze* 33, 1937 (113-116). [G.e.sp.]
- 633.2.03-1.81**—**Hanley, F.** Notes on manuring. The place of fertilizers in grassland management. *J. Min. Agric.* 43, 1937 (985-989).
- 633.2.03-1.81**—**MacKenzie, J. M. F.** Pasture conservation and improvement. *Sci. Agric.* 17, 1937 (334-335).
- 633.2.03-1.81**—**Schmitt, L.** More and better home-grown fodder by the rational manuring of grassland. *Ernähr. Pflanze* 33, 1937 (116-119). [G.e.sp.]
- 633.2.03-1.81**—**Taroczi, H.** Artificial fertilizers for lawns, meadows and pastures. *Cukorépa* 10, 1937 (47-49). *Herb. Abs.* 7 (174).
- 633.2.03-1.81 : 581.5** **Hall, T. D. ; Murray, S. M.** The botanical analysis of intensively grazed pastures. *S. Afric. J. Sci.* 32, 1935 (189-196).
- 633.2.03-1.81 : 581.5** **Dore, W. G.** Pasture studies. X. Succession and variation in the botanical composition of permanent pastures. *Sci. Agric.* 16, 1936 (569-590).
- 633.2.03-1.81 : 636.5** **Fertilizer, Feeding Stuffs . . . Journal.** Fertilizer requirements of poultry runs. *Fert. Feed. J.* 21, 1936 (365-369).
- 633.2.03-1.81 : 637.3** **Guggemos.** Influence of manuring on the suitability of milk for cheese. *Das Superphosphat* 10, 1934 (104-109). *B.C.A.* 55 (1115).
- 633.2.03-1.81 : 637.3** **Truninger, E.** In what way can manuring and fodder influence the adaptability of milk to cheese production? *Ann. Agric. Suisse* No. 9, 1935 (934-953). [G.f.]
- 633.2.03-1.816.2** **Dvorak, K.** The manuring of grassland in spring. *Cukorépa* 10, 1937 (46-47). *Herb. Abs.* 7 (174).
- 633.2.03-1.816.23** **McGillivray, R. ; Stevenson, J.** Pasture top-dressing on West Coast, South Island, of New Zealand. *N.Z. J. Agric.* 49, 1934 (212-215).
- 633.2.03-1.816.23** **Miller, W. B. ; Morrow, J. A.** Sheep carrying capacity and top-dressing. Trials at the Rutherglen Experiment Farm. *J. Dept. Agric. Victoria*, 32, 1934 (499-502).
- 633.2.03-1.816.23** **Andrew, W. D.** Pasture top-dressing. The use of artificial fertilizers. *J. Dept. Agric. Victoria*, 33, 1935 191-193.
- 633.2.03-1.816.23** **Prince, F. S. ; Blood, P. T. ; Phillips, T. G. et al.** Top-dressing pasture lands with fertilizer. *N.H. Agric. Expt. Sta. Circ.* 48, 1935 pp. 16. *F.S.R.* 73 (773).
- 633.2.03-1.816.23** **Smallfield, P. W.** Pasture top-dressing in the Auckland Province: experimental work, 1928-34. *N.Z.J. Agric.* 50, 1935 (214-222).
- 633.2.03-1.816.23** **Elliott, I. L.** Top-dressing in sheep-farming on rolling country in the Hastings district. *N.Z. J. Agric.* 53, 1936 (287-292).
- 633.2.03-1.816.23** **McGillivray, R.** Results from pasture top-dressing in Canterbury. *N.Z. J. Agric.* 52, 1936 (351-353).
- 633.2.03-1.816.23** **Murray, J. K. ; Bryan, W. W. ; Steele W. G.** A top-dressing experiment on the pastures of the sandy ridges of the Locker Valley. *Queensland Agric. J.* 48, 1937 (16-22).



# BIBLIOGRAPHY OF SOIL SCIENCE

- 633.2.03-1.816.23—Smallfield, P. W. Pasture top-dressing in the Auckland province. *N.Z. J. Agric.* 53, 1937 (14-22).
- 633.2.03-1.816.23 : 546.73—Askew, H. O.; Dixon, J. K. Influence of cobalt top-dressing on the cobalt status of pasture plants. *N.Z. J. Sci. Tech.* 18, 1937 (688-693).
- 633.2.03-1.821.1—Daulen, G. K. van. The liming of grassland. *Rept. Third Grassland Conf. Zurich*, 1934 (34-53). *Herb. Abs.* 5 (38). (Gc.)
- 633.2.03-1.821.1—Romashev, P. I.; Mikhailov, M. M. Liming grassland. *Trudy Inst. Kormov* No. 2, 1934 (108-122). *Herb. Abs.* 6 (56).
- 633.2.03-1.821.1—Vries, O. de. Contributions to the question of liming on grassland. *Rept. Third Grassland Conf. Zurich*, 1934 (53-64). *Herb. Abs.* 54 (38). (Gc.)
- 633.2.03-1.821.1—Brenchley, W. E. The influence of season and of the application of lime on the botanical composition of grassland herbage. *Ann. Appl. Biol.* 22, 1935 (183-207).
- 633.2.03-1.821.1—Koperzinsky, V. V. The distribution of lime added to meadows. *Khm. Sotsial. Zemel.* No. 3, 1937 (7-15). C.A. 31 (7172).
- 633.2.03-1.821.1—Uhl, F. A.; Bauer, R. Three-year liming experiments on acid meadowland. *Botan. Pflanznär.* 2, 1937 (336-351). (G.)
- 633.2.03-1.821.1-1.853—Featherstone, J. The effect of lime and basic slag on pastures. *Revue Agric. Res.* 7, 1935 (47-50). *Herb. Abs.* 5 (287).
- 633.2.03-1.824—Cunningham, I. J. Influence of manurial treatment with magnesium compounds on the magnesium content of pasture. *N.Z. J. Sci. Tech.* 17, 1936 (775-778).
- 633.2.03-1.83—Midgely, A. R.; Weiser, V. L. Need and use of potash on Vermont pastures. *U. Agric. Expt. Sta. Bull.* 403, 1936, pp. 18. E.S.R. 75 (619).
- 633.2.03-1.83—Woodcock, J. W. Some aspects of potash manuring of pastures. *N.Z. J. Agric.* 53, 1936 (193-199).
- 633.2.03-1.839—Klapp, E.; Stählin; Zäpfle. Influence of irrigation with potash factory effluents on permanent meadowland. *Forsch.* 123, 1935 (237-275). C.A. 30 (4970). (G.)
- 633.2.03-1.84—Sakshaug, B. Trials with nitrogenous fertilizers on pastures. *Ark. Bot.* Norge 11, 1932 (84-106). *Herb. Abs.* 5 (39). (N.)
- 633.2.03-1.84—Linland, D. Trials in nitrogenous manuring 1929-1933. *Meld. Stat. Foræstgdd. Forus* 1933 (127-42). *Herb. Abs.* 5 (38). (N.)
- 633.2.03-1.84—Bender, C. B. Five-years' results on pasture fertilization and rotation management. *N. J. Agric. Expt. Sta. Bull.* 564, 1934, pp. 8. B.C.A. 54 (245).
- 633.2.03-1.84—Charpentier, C. A. G. Results of nitrogen manuring experiments on pastures in 1933. *Stamen Landt.* 6, 1934 (118-130). *Herb. Abs.* 4 (258).
- 633.2.03-1.84—Nilsson, G. The influence of harvesting time and nitrogen fertilizing upon quantity and chemical composition of a hay crop. *Nord. JordbrForsk.* 13, 1934. C.A. 29 (8208).
- 633.2.03-1.84—Odellen, M. Nitrogenous manuring experiments on meadows. *Meld. Norg. LandbrForsk.* 14, 1934 (739-783). (N.g.)

## FERTILIZERS AND GENERAL AGRONOMY

- 633.2.03-1.84**—Blackman, G. E.; Lewis, A. H. The growth of pasture in the spring, and its relationship to available nitrogen supply and temperature. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (201-203).
- 633.2.03-1.84**—Brüne, F.; Igel, H. The results of nitrogen fertilizing experiments on high moor pastures. *Landw. Jahrb.* 81, 1935 (251-271). [G.]
- 633.2.03-1.84** Deichmann, E. A nitrogen fertilizer test. *Weidewirtschaft und Futterbau, Beil. z. Dtsch. Landw. Tierz.* 6, 1935 (21). *Herb. Zbl.* 6 (256).
- 633.2.03-1.84**—Dodd, D. R. The place of nitrogen fertilizers in a pasture fertilization program. *J. Amer. Soc. Agron.* 27, 1935 (853-862).
- 633.2.03-1.84**—Frankena, H. J. Nitrogen fertilization of pasture land. II. Experiments with the application of nitrogenous fertilizers during the different seasons. *Versl. Rijkslandb.Proefsta. Groningen*, 41A, 1935 (29-45). *Herb. Abs.* 5 (198). C.A. 29 (5580).
- 633.2.03-1.84**—Glöbel, G. Nitrogen manuring of pastures. *Nord. Jordbr.Forsk.* 5 7, 1935 (799-808). [Sw.]
- 633.2.03-1.84** Weidewirtschaft und Futterbau. A trial of manuring with nitrogen. *Weidew. u. Futterbau* 10, 1935 (22-24). *Herb. Abs.* 5 (198).
- 633.2.03-1.84**—Frankena, H. J. Nitrogenous manuring of grassland. III. Comparison of different nitrogenous fertilizers. *Versl. Rijkslandb.Proefsta. Groningen*, 42 A, 1936 (669-733). [Du.g.]
- 633.2.03-1.84**—Frankena, H. J. The use of nitrogenous fertilizers and the time of mowing. *Scot. Med. d. Rijklandb.Proefsta. Groningen*, 44, 1936, pp. 8. *Herb. Abs.* 6 (251).
- 633.2.03-1.84**—Lewis, A. H. The effects of ammonium and nitrate nitrogen on the growth of perennial rye grass. *J. Agric. Sci.* 26, 1936 (249-257).
- 633.2.03-1.84**—Rappe, G. Comparison between the effects of different nitrogenous fertilizers in grassland experiments at Gisselås and Sorbyn. *Scenska MosskFören. Tidskr.* 51, 1937 (77-135). *Herb. Abs.* 7 (270). [Sw.e.]
- 633.2.03-1.84:551.58**—Blackman, G. E. The influence of temperature and available nitrogen supply on the growth of pasture in the spring. *J. Agric. Sci.* 26, 1936 (620-647).
- 633.2.03-1.841.5**—Detlessen. Harmlessness of calcium cyanamide for grazing animals. *Weidew. u. Futterbau* 11, 1936 (3-4). *ForschDienst.* 1 (387). [G.]
- 633.2.03-1.85**—Demela, J.; Brada, L. Fertilizing meadows with phosphoric acid and effects on the internal quality of the hay. *Čsl. Zool.* 17, 1935 (274-275). *Herb. Abs.* 6 (57).
- 633.2.03-1.85**—Garner, H. V. The choice of phosphates for grassland. *Cent. Landecon. Assoc. J.* 16, 1935 (255-258).
- 633.2.03-1.85**—Pawlik, R. Comparative experiments with superphosphate and basic slag carried out on meadows. *Superphosphate* 8, 1935 (65-70; 81-83).
- 633.2.03-1.85**—Stapledon, R. G. The improvement of hill land. *Scot. J. Agric.* 19, 1935 (14-24).
- 633.2.03-1.851**—Rinne, L. Manuring of low moor pastures with "Festi phosphorite". *Agronomnia, Tartu*, 17, 1937 (626-637). [Et.g.]

## BIBLIOGRAPHY OF SOIL SCIENCE

**633.2.03-1.855**—Davies, J. G.; Scott, A. E.; Fraser, K. M. Natural pastures: their response to superphosphate. *Aust. Coun. Sci. Indust. Res. Bull.* 83, 1934, pp. 76.

**633.2.03-1.855**—Sherwin, R. A. Pasture top-dressing trials in Midlands. *Tasmanian J. Agric.* 6, 1935 (87-89). *Herb. Abs.* 5 (219).

**633.2.03-1.855**—Jones, R. P. Effect of superphosphate on botanical composition. *Herb. Res.* 5, 1937 (25-31).

**633.2.03-1.86**—Friedmann, G. The use of organic manure in the Italian Alps. *Rept. Third Grassland Conf. Zurich*, 1934 (81-89). *Herb. Abs.* 5 (39). (G.)

**633.2.03-1.86**—Aslander, A. Application of farmyard manure to hay leys. Some trials in the county of Gavleborg. *Landtmannen* 20, 1936 (347-348). *Herb. Abs.* 7 (77).

**633.2.03-1.862**—Wittek, H. Practical experiments with thin liquid manure. *Wien. Landw. Ztg.* 85, 1935 (342-344). *Forsch.-Dienst.* 1 (310). (G.)

**633.2.03-1.862**—Ernest, E. The application of farmyard manure to cultivated pastures. *Landtmannen* 20, 1936 (311). *Herb. Abs.* 7 (76).

**633.2.03-1.893.123**—Sakshaug, B. Trials with nitrophoska on pastures. *Ann. Bereds. Norge* 12, 1936 (108-114). *Herb. Abs.* 7 (178).

**633.21-1.5**—Harrison, C. M. Greenhouse studies on growth of Kentucky bluegrass. *Bull. Green Sect. U.S. G. B. Assoc.* 13, 1933 23-39. *Herb. Abs.* 5 (71).

**633.21-1.67-1.81**—Mortimer, G. B.; Ahlgren, L. H. Influence of fertilization, irrigation and stage and height of cutting on yield and composition of Kentucky bluegrass (*Poa pratensis* L.). *J. Amer. Soc. Agron.* 28, 1936 515-533. (C.A. 30 (6111).

**633.23-1.81**—North, H. F. A.; Odland, T. E. Seed yields of Rhode Island Colonial Bent (*Agrostis tenuis* Sibth.) as influenced by the kind of fertilizer applied. *J. Amer. Soc. Agron.* 26, 1934 939-945.

**633.24-1.84**—Musbach, F. L. Nitrogen manuring and early cutting increase the yield and quality of timothy hay. *Wis. Agric. Expt. Sta. Bull.* 428, 1934 (60). Z.P.D. 43 (24).

**633.24-1.84:581.192**—Sprague, H. B. Improving the protein content of timothy (*Phleum pratense*) by an application of soluble nitrogen fertilizers 10 to 20 days before harvest. *J. Amer. Soc. Agron.* 29, 1937 697-698.

**633.263:633.326**—Trumble, H. C.; Shapter, R. E. The influence of nitrogen and phosphorus treatment on the yield and chemical composition of Wimmera rye grass and subterranean clover grown separately and in association. *Aust. Coun. Sci. Indust. Res. Bull.* 105, 1937 (25-36).

**633.263-1.821.1**—Nisbet, A. F. R. Some effects of lime on rye-grass. *Scot. J. Agric.* 18, 1935 (349-353).

**633.263-1.84**—Lewis, A. H. The relative rates of uptake of ammonium and nitrate nitrogen by perennial ryegrass. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (204-205).

**633.266**—Leukel, W. A.; Barnette, R. M. Cutting experiments with Bahia grass grown in lysimeters. *Fla. Univ. Agric. Expt. Sta. Tech. Bull.* 286, 1935, pp. 36.

## FERTILIZERS AND GENERAL AGRONOMY

- 633.266-1.5**—**Hamblyn, C. J.** Paspalum as a pasture-grass. *N.Z. J. Agric.* 53, 1936 (257-262).
- 633.267 : 633.3**—**Trumble, H. C. ; Shapter, R. E.** The yield and nitrogen content of a perennial grass (*Phalaris tuberosa*) when grown in association with annual legumes. *Aust. Coun. Sci. Indust. Res. Bull.* 105, 1935 (37-40).
- 633.282-1.81**—**Saint, S. J.** Manurial trials with sour grass (*Andropogon pertusus*). *Barbados Agric. J.* 6, 1937 (1-19).
- 633.282-1.81 : 581.192**—**Theron, G. C.** Veld management investigations at the school of agriculture, Potchefstroom. Preliminary report. *S. Africa Dept. Agric. Forestry Bull.* 166, 1937, pp. 23. C.A. 31 (7171).
- 633.283**—**Maher, C.** Elephant grass (*Pennisetum purpureum*) as a cattle fodder in Kenya. *E. Afric. Agric. J.* 1, 1936 (340-342).
- 633.283 : 632.954**—**Grau, F. V.** Control of crabgrass and other turf weeds with chemicals. *Bull. Green. Sect. U.S. Golf Assoc.* 13, 1933 (47-52). *Herb. Abs.* 5 (71).
- 633.283-1.5**—**Paterson, D. D.** The cropping qualities of certain tropical fodder grasses. *Emp. J. Expt. Agric.* 4, 1936 (6-16).
- 633.287-1.445.7**—**Bryce, J.** *Spartina Townsendii* and *S. Brasiliensis* in warm countries. *Keic Bull.* 1, 1936 (21-34).
- 633.288**—**Tropenpflanzer.** The production of telt hay. *Tropenpflanzer* 37, 1934 (452-453). *Herb. Abs.* 5 (59). G.
- 633.288-1.4**—**Aston, B. C. ; Grimmert, R. E. R. ; Shorland, F. B.** Pampas grass (*Cortaderia Selloana* (Schult. Aschers. and Graten) : a new supplementary fodder for ruminants in New Zealand. *Emp. J. Expt. Agric.* 4, 1936 (332-342).
- 633.289 : 632.954.8**—**Estate Magazine.** Eradication of couch. *Estate Mag.* 34, 1934 (924-925). *Herb. Abs.* 5 (43).
- 633.289-1.81**—**Maloch, M.** Changes in Nardetum meadows caused by mineral fertilizers in the East-Slovakian Carpathians. *Zem. Arch.* 26, 1935 (356-369). *Herb. Abs.* 6 (55).
- 633.289-1.81**—**Dexter, S. T.** Response of quack grass to defoliation and fertilization. *Plant Physiol.* 11, 1936 (843-851). C.A. 31 (1544).
- 633.289-1.84**—**Dexter, S. T.** The drought resistance of quack grass under various degrees of fertilization with nitrogen. *J. Amer. Soc. Agron.* 29, 1937 (568-576).
- 633.289-1.84**—**Dexter, S. T.** The winterhardiness of weeds. *J. Amer. Soc. Agron.* 29, 1937 (512-517).
- 633.289-1.86**—**Schneider, F.** A farm manure trial on an East Styrian Nardus pasture and the preliminary result. *Rept. Third Grassland Conf. Zurich*, 1934 (296-307). *Herb. Abs.* 5 (40). G.e.
- 633.3 : 546.27**—**Sokolov, A. V. ; D'iakova, E. V. ; Dmitriev, K. A.** The effect of boron on the seed and hay yields of leguminous plants. *Khim. Sotsial. Zemled.* No. 5, 1937 (57-70). R.e.
- 633.3-1.415.1**—**Kawashima, R.** The effect of reaction and lime content of soil on the yield and composition of several leguminous green-manure crops and green corn. *J. Sci. Soil Japan*, 9, 1935 (389-410). C.A. 30 (1167).
- 633.3-1.415.1**—**Söderström, B.** Acidity of cultivated soils and the feeding of milch cows on home-grown fodder. *Karjatalous* 11, 1935 (37-41).

# BIBLIOGRAPHY OF SOIL SCIENCE

**633.3-1.416.1**—Vartiavaara, U. New experiences regarding the principles of legume cultivation. *Landmannen* 16, 1934 (88-89). *Herb. Abs.* 4 (239).

**633.3-1.416.1**—Mishustin, E. N.; Bernard, V. V. The accumulation of nitrogen by leguminous plants. *Khim. Sotsial. Zemled.* Nos. 11-12, 1935 (110-116). [R.]

**633.3-1.461.52**—Duggar, J. F. Root nodule formation as affected by planting of shelled or unshelled seeds of bur clovers, black medick, hubam, and crimson and subterranean clovers. *J. Amer. Soc. Agron.* 26, 1934 (919-923).

**633.3-1.461.52**—Malan, G. A study of root nodules and mycorrhiza in Leguminosae of the alpine zone of the Faggio, Abete and Larice. *Nuovo G. Bot. Ital.* 42, 1935 (475-476).

**633.3-1.461.52**—Winogradsky, S. Studies on the microbiology of the soil. Investigations on nodule bacteria of leguminous plants. *Ann. Inst. Pasteur* 56, 1936 (221-250). [F.]

**633.3-1.461.52**—Rabinovich, Ya. L. Accumulation of nitrogen in the soil by leguminous plants. *Khim. Sotsial. Zemled.* No. 3, 1937 (90-98). [R.]

**633.3-1.461.52**—Reid, J. J.; Baldwin, I. L. The infective ability of rhizobia of the soybean, cowpea, and lupine cross-inoculation groups. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (219).

**633.3-1.461.52**—Wilson, J. K. Species of legumes and their associated root nodule organism. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (221).

**633.3-1.584**—Fowler, E. D.; Lewis, R. D. Some effects of cover crops and their management on the fertility of Norfolk sandy loam. *Proc. S. E. Pean Grow. Assoc.* 28, 1934 (37-46). [S. R.] 72 (48).

**633.3-1.584**—Villax, O. Field legumes as a preliminary crop. *K. Medd.* 44, 1934 (769). *Herb. Abs.* 5 (61). [H.]

**633.3-1.584**—Virtanen, A. I. The chemistry of grass crops. *J. Soc. Chem. Indust.* 54, 1935 (1015-1020).

**633.3-1.584**—Alabama. Hairy vetch and Austrian winter peas for soil improvement. *Ala. Agr. Expt. Sta. Circ.* 74, 1936, pp. 12.

**633.3-1.584**—Lyon, T. L. The residual effects of some leguminous crops. *Cornell Agric. Expt. Sta. Bull.* 645, 1936, pp. 17.

**633.3-1.811.1**—Lemmermann, O. Hellriegel's experiments on the nitrogen nutrition of Graminae and legumes. *Ztschr. Pflanz. Dung.* 45, 1936 (257-276). [G.]

**633.3-1.811.3**—Rathsack, K.; Laufer, G. The ability of different leguminous plants to absorb potash from the soil. *Verh. Pflanz. 32, 1936 (141-144). [G.]*

**633.3-1.811.9**—Scharer, K.; Schropp, W. The action of silicic acid, boron, and other trace elements upon the growth of Pisum, Vicia faba, and Glycine hispida. *Bodenk. Pflanznähr.* 1, 1936 (376-383). *Herb. Abs.* 7 (268).

**633.3-1.821.1**—Greiner, L. M.; Walker, R. H.; Brown, P. E. A greenhouse study of the effects of fine limestone applied in the row with legume seed on acid soils. *J. Amer. Soc. Agron.* 29, 1937 (157-165).

**633.3-1.84**—Roux, F. The application of nitrogenous fertilizers to legumes. *C. R. Acad. Agric.* 21, 1935 (199-203). *Herb. Abs.* 5 (199). [F.]

## FERTILIZERS AND GENERAL AGRONOMY

- 633.31—Klinkowski, M.** Lucerne: its ecological position and distribution in the world. *Imp. Bur. Plant Genetics (Herb. Plants) Bull.* 12, 1933, pp. 61.
- 633.31-1.411.2-1.81—McGeorge, W. T.; Breazeale, J. F.** Fertilization of alfalfa on alkaline calcareous soils. *Ariz. Agric. Expt. Sta. Bull.* 154, 1936, pp. 26. E.S.R. 76 (325).
- 633.31-1.415.1—Arena, A.** The influence of hydrogen-ion concentration of the soil on the growth of alfalfa. *Rev. Argent. Agron.* 1, 1934 (116-135). [Sp.]
- 633.31-1.415.1:581.144.2—Watenpugh, H. N.** The influence of the reaction of soil strata upon the root development of alfalfa. *Soil Sci.* 41, 1936 (449-462).
- 633.31-1.416—Hill, H. H.** The liberation of plant nutrients from the soil as affected by alfalfa. *Va. Agric. Expt. Sta. Tech. Bull.* 60, 1937, pp. 19.
- 633.31-1.44—Tysdal, H. M.** An analysis of soil and seasonal effect in alfalfa variety tests. *J. Amer. Soc. Agron.* 27, 1935 (384-391). E.S.R. 73 (605).
- 633.31-1.44-1.81—Grizzard, A. L.** Effects of soil type and soil treatments on the chemical composition of alfalfa plants. *J. Amer. Soc. Agron.* 27, 1935 (81-99).
- 633.31-1.44-1.81—Vandecaveye, S. C.; Bond, L. V.** Yield and composition of alfalfa as affected by various fertilizers and soil types. *J. Amer. Soc. Agron.* 28, 1936 (491-505). C.A. 30 (6111).
- 633.31-1.458—Akers, T. F.; Westover, H. L.** Forage-crop field experiments at West Point, Miss. *U.S.D.A. Tech. Bull.* 419, 1934, pp. 20. *Herb. Abs.* 6 (162).
- 633.31-1.458—Henson, P. R.; Westover, H. L.** Alfalfa experiments at Stoneville, Miss. *U.S.D.A. Tech. Bull.* 495, 1935, pp. 13.
- 633.31-1.458:576.809.6—Demolon, A.; Dunez, A.** The rôle of bacteriophage in the sickness of lucerne soils. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (156-157). [F.]
- 633.31-1.458:576.809.6—Demolon, A.; Dunez, A.** Researches on the rôle of bacteriophage in the fatigue of lucerne soils. *Ann. Agron.* 5 (n.s.), 1935 (51-71). [F.]
- 633.31-1.458:576.809.6—Demolon, A.; Dunez, A.** Soil fatigue. Cause and remedies. *C.R.* 202, 1936 (1704-1706). [F.]
- 633.31-1.458:576.809.6—Demolon, A.; Dunez, A.** Fatigue of lucerne fields. *C.R. Acad. Agric.* 22, 1936 (579-581). [F.]
- 633.31-1.458:576.809.6—Demolon, A.; Dunez, A.** New observations on the bacteriophage and soil fatigue of lucerne soils. *Ann. Agron.* 6 (n.s.), 1936 (434-454). [F.]
- 633.31-1.461.13—Beavens, F. A.; James, L. H.** The microbial decomposition of successive cuttings of alfalfa hay under aerobic conditions. *J. Agric. Res.* 48, 1934 (1121-1126). *Herb. Abs.* 5 (12).
- 633.31-1.5—Ball, R. S.** The cultivation of lucerne. *E. Afric. Agric. J.* 1, 1935 (29-34).
- 633.31-1.5—Meijers, P. G.** Lucerne cultivation. *RijkslandbPronsta. Akker-en-Weedeb. Groningen*, 1936, pp. 95. [Du.]
- 633.31-1.5—Könckamp, A.** The growing of lucerne under unfavourable conditions of climate and soil. *ForschDienst.* 3, 1937 (456-466; 482-496). *Herb. Abs.* 7 (212).

## BIBLIOGRAPHY OF SOIL SCIENCE

- 633.31-1.547.1-1.81 --Whittet, J. N. Effect of fertilizers on some pasture plant seeds. *Agric. Gaz. N.S.W.* 47, 1936 (7-8).
- 633.31-1.586 Koldaev, A. A.; Pozariskala, L. I. Cultivation of lucerne in dry farming. *Bull. SoudNIKhl*, 1937, pp. 27. *Herb. Abs.* 7 (213).
- 633.31-1.586--Ogilvie, W. G. Dryland lucerne possibilities on the highveld. *Farm. Weekly S. Africa* 53, 1937 (1936-1937).
- 633.34-1.67 --Bartels, L. C. Lucerne growing. Cultivation hints. *J. Dept. Agric. Victoria* 33, 1935 (167-171).
- 633.31-1.81 --Bortolotti, O. The effect of manuring and of the number of cuts upon the composition of lucerne hay. *Ann. Tec. Agrar. Roma* 8, 1935 (71-89). *Herb. Abs.* 6 (84).
- 633.31-1.81 --Frank, F. Fertilizer experiments with lucerne grass. *Ernähr. Pflanze* 31, 1935 (410-415). *Herb. Abs.* 6 (146). G.e.
- 633.31-1.811 --Radu, I. F. The course of the quantitative uptake of N,  $P_2O_5$ ,  $K_2O$ ,  $CaO$  and  $MgO$  by lucerne. *Ztschr. Pflanz. Düng.* 45, 1936 (189-205). G.
- 633.31-1.811 --Steenbjerg, F. The growth conditions required by lucerne. *Vegskr. Landm.* 81, 1936 (372-374). *Herb. Abs.* 7 (177).
- 633.31-1.811.3 Frank, F. Fertilizer experiments with lucerne. *Ernähr. Pflanze* 31, 1935 (410-413). G.e.
- 633.31-1.84--Crocioni, A. Research on the use of nitrogenous fertilizers for lucerne. *Nuov. Ann. Agric.* 14, 1934 (291-309). *Herb. Abs.* 7 (76).
- 633.31-1.842.3 Thornton, H. G. The action of sodium nitrate upon the infection of lucerne root-hairs by nodule bacteria. *Proc. Roy. Soc.* 119B, 1936 (474-492).
- 633.31-1.842.3 Thornton, H. G.; Nicol, H. Reduction of nodule numbers and growth, produced by the addition of sodium nitrate to lucerne in sand culture. *J. Agric. Sci.* 26, 1936 (173-188).
- 633.31-1.842.3 Thornton, H. G.; Rudorf, J. E. The abnormal structure induced in nodules on lucerne (*Medicago sativa* L.) by the supply of sodium nitrate to the host plant. *Proc. Roy. Soc.* 120B, 1936 (240-252). *Herb. Abs.* 6 (197).
- 633.31-1.847.2 Ioffe, R. 1934 results with nitrogen experiments with lucerne. *Bull. SoudNIKhl* No. 2, 1936 (3-8). R.e.
- 633.31-1.847.2 Strong, T. H. Rhizobial strain variation in relation to the problem of lucerne seed inoculation. *J. Inst. Ind. Agric. Sci.* 2, 1936 (120-121).
- 633.31-1.85 --Kharkov, D. V. The effect of phosphatic fertilizers on lucerne. *Bozba za Khl-pok*, 10-11, 1934 (69-78). R.
- 633.31-1.85 --Green, J. Tests with alfalfa and other farm crops. *Mont. Agric. Expt. Sta. Bull.* 334, 1937, pp. 22. E.S.R. 77 (166).
- 633.31-1.851--Kudrin, S. A. Phosphorites for alfalfa on grey soils. *Bull. SoudNIKhl* No. 5, 1935 (37-45). *Herb. Abs.* 6 (252). C.A. 30 (7270). R.e.
- 633.31-2.111-1.85 --Novikov, V. A.; Mokkova, M. L. The effect of phosphorus applications on winter hardness of lucerne. *Bull. SoudNIKhl*, 1936 (129-148). *Herb. Abs.* 7 (267).
- 633.31-2.19:546.27 McLarty, H. R.; Wilcox, J. C.; Woodward, C. G. A yellowing of alfalfa due to boron deficiency. *Sci. Agric.* 17, 1937 (515-517). E.F.

## FERTILIZERS AND GENERAL AGRONOMY

- 633.31-2.19:546.27**—Willis, L. G.; Piland, J. R. A response of alfalfa to borax. *Science*, 86, 1937 (179-180).
- 633.31-2.4-1.415.1**—Buchholtz, W. F. The relation of soil acidity to a seedling disease in alfalfa on three Iowa soils. *Phytopath.* 25, 1935 (421-425).
- 633.31-2.4-1.581**—Grandfield, C. O.; Lefebvre, C. L.; Metzger, W. H. Relation between fallowing and the damping-off of alfalfa seedlings. *J. Amer. Soc. Agron.* 27, 1935 (800-806).
- 633.32-1.432-1.81**—Folckmann, W.; Brouwer, W. Investigations of the influence of manuring, sprinkling irrigation and ground water level on a stand of clover grass. *PflBau, PflSchutz*, 1934 (241). *Z.P.D.* 37 (127). [G.]
- 633.32-1.461.52**—Georgi, C. E. Influence of the carbohydrate-nitrogen relation on nodule production by red clover. *J. Agric. Res.* 51, 1935 (597-612).
- 633.32-1.461.52**—Strong, T. H. The influence of host plant species in relation to the effectiveness of the rhizobium of clovers. *J. Coun. Sci. Indust. Res.* 10, 1937 (12-16).
- 633.32-1.81**—Pilaski, W. The manuring of clover. *Phosphorsäure* 5, 1935 (735-742). [G.]
- 633.32-1.81**—Yukhimchuk, F. F. The rôle of fertilizers in obtaining steady yields of seed clover. *Khim. Sotsial. Zemled.* No. 2-3, 1936 (104-107). [R.]
- 633.32-1.81**—Weijer, L. The significance of clover species in the composition of grassland and factors which promote its development. *Landschap. Tijdschr.* 49, 1937 (224-236). [Du.g.]
- 633.32-1.841.1**—Caldwell, J.; Richardson, H. L. The growth of clover in the presence of ammonium sulphate. *J. Agric. Sci.* 26, 1936 (263-267).
- 633.321-1.81**—Parisot; Girard. Use of inorganic fertilizer as covering on purple clover. *Rech. Fert. Sta. Agron. Douai*, 1934, 1935 (41-42). C.A. 29 (7003).
- 633.321-1.811.9**—Merkenschlager, F. *Trifolium pratense* as of "primeval meadow" constitution. Second communication. *Prakt. Bl. PflBau*, 14, 1936 (164-183). *Herb. Abs.* 7 (110).
- 633.322:632.651.6**—Bates, G. H. The distribution of wild white clover (*Trifolium repens*) in relation to the activity of earthworms (Lumbricidae). *Welsh J. Agric.* 9, 1933 (195-208). C.A. 27 (5136).
- 633.322-1.81**—Radtke, R. The occurrence of white clover in permanent pastures under organic and inorganic fertilizers. *Rept. Ind. Grassland Conf. Zurich*, 1934 (126-130). *Herb. Abs.* 5 (65). [G.]
- 633.322-1.841.1**—Blackman, G. E. The ecological and physiological action of ammonium salts on the clover content of turf. *Ann. Bot.* 48, 1934 (975-1001). C.A. 29 (1199).
- 633.326-1.5**—Hudson, E. R. Subterranean clover. Establishment by surface introduction. *Tasmanian J. Agric.* 6, 1935 (167-168).
- 633.326-1.5**—Hamblyn, C. J. Subterranean clover in the North Island. *N.Z. J. Agric.* 54, 1937 (25-29).
- 633.326-1.5**—Harrison, J. E. Subterranean clover. *J. Agric. Victoria* 35, 1937 (77-84).



# BIBLIOGRAPHY OF SOIL SCIENCE

- 633.329-1.461.52—Madhok, M. R. Studies on Rhizobium leguminosarum of berseem (Trifolium alexandrinum). *Indian J. Agric. Sci.* 5, 1935 (428-444). *Herb. Abs.* 5 (249).
- 633.33-1.461.52—Allen, O. N.; Allen, E. K. Root nodule bacteria of some tropical leguminous plants. I. Cross-inoculation studies with *Vigna sinensis* L. *Soil Sci.* 42, 1936 (61-76).
- 633.33-1.461.52—Dinglasan, M. L. A study of the formation and nitrogen content of root tubercles of cowpea. *Philipp. Agricult.* 25, 1936 (169-190). C.A. 30 (6873).
- 633.34: 546.27—Nowotownna, A. The influence of boron on the development of soybeans and of sugar beets. *Mém. Inst. Nat. Pol. Econ. Rur. Pulawy* 15, 1934 (19-36). C.A. 30 (7270).
- 633.34-1.4—Poehlman, J. M. A study of the relative adaptation of certain varieties of soybeans. *Missouri Agric. Expt. Sta. Res. Bull.* 255, 1937, pp. 43.
- 633.34-1.461.52—Orcutt, F. S. Nitrogen metabolism of soybeans in relation to the symbiotic nitrogen fixation process. *Soil Sci.* 44, 1937 (203-215).
- 633.34-1.461.52-1.841.1—Andrews, W. B. Effect of ammonium sulphate on the response of soybeans to lime and artificial inoculation and the energy requirement of soybean nodule bacteria. *J. Amer. Soc. Agron.* 29, 1937 (681-689).
- 633.34-1.5—Berkner, F. Twenty years' experience of the cultivation of soya beans. *Pflanzenbau* 12, 1935 (51-75). *Herb. Abs.* 6 (87).
- 633.34-1.5—Burlison, W. L. The soybean. *Ill. Agric. Expt. Sta. Circ.* 461, 1936, pp. 15.
- 633.34-1.5—Lunden, J. C. The cultivation of soybeans. *Dansk. Fœdel.* 19, 1936 (33-34). *Herb. Abs.* 7 (23).
- 633.34-1.5—Maruri, A. Cultivation of the soya bean. *Rev. Agric. Cuba*, 20, 1937 (37-49).
- 633.34-1.5—Post, A. H. Soybeans: their adaptation and production in Montana. *Mont. Agric. Expt. Sta. Bull.* 335, 1937, pp. 11.
- 633.34-1.531.2—Stitt, R. E. The effect of depth of planting on the germination of soybean varieties. *J. Amer. Soc. Agron.* 26, 1934 (1001-1004).
- 633.34-1.584—Brown, H. B. Effect of soybeans on corn yields. *La. Agric. Expt. Sta. Bull.* 265, 1935 (3-31). C.A. 30 (2306).
- 633.34-1.584—Dodd, D. R.; Pohlman, G. G. Some factors affecting the influence of soybeans, oats, and other crops on the succeeding crop. *W. Va. Agric. Expt. Sta. Bull.* 265, 1935, pp. 23.
- 633.34-1.584—Kisliakova, Z. V.; Nedolia, I. K. A natural mulch for industrial crops. *Soviet Subtrop.* No. 10, 1936 (78-80). [R.]
- 633.34-1.81—Lübecke, H. Effect of manuring including inoculation and the effect of the trace elements on the yield and quality of soya beans. *Forschberst.* 2, 1936 (558-568). G.
- 633.34-1.81: 581.192—Mosolov, I. V. The effect of nitrogen phosphorus and potassium on the formation of protein, fat and carbohydrates in soya seeds. *Khm. Selsal. Zemled.* No. 9, 1936 (91-101). [R.]
- 633.34-1.811—Villax, E. The soil and fertilizer requirements of soybeans. *Metógasdaság*, 12, 1935 (67). Z.P.D. 42 (108).

## FERTILIZERS AND GENERAL AGRONOMY

- 633.34-1.811**—**Merkenschlager, F.** The constitution of the soybean plant. *Ernähr. Pflanze* 32, 1936 (189-194). [G.e.]
- 633.34-1.811.1**—**Orcutt, F. S.; Wilson, P. W.** The effect of nitrate-nitrogen on the carbohydrate metabolism of inoculated soybeans. *Soil Sci.* 39, 1935 (289-295).
- 633.34-1.811.1**—**Umbreit, W. W.; Fred, E. B.** The comparative efficiency of free and combined nitrogen for the nutrition of the soybean. *J. Amer. Soc. Agron.* 28, 1936 (548-555).
- 633.34-1.811.1**—**Umbreit, W. W.; Orcutt, F. S.; Wilson, P. W.** Comparative efficiency of free and combined nitrogen for nutrition of the soybean. *Abs. Sci. Proc. 37th Ann. Meet. Soc. Amer. Bact.* 1935. *J. Bact.* 31, 1936 (92-93).
- 633.34-1.811.2**—**Hutchings, T. B.** Relation of phosphorus to growth, nodulation and composition of soybeans. *Missouri Agric. Expt. Sta. Res. Bull.* 243, 1936, pp. 46.
- 633.34-2.112**—**Clements, H. F.** Drought resistance of soya bean. *Wash. St. Coll. Res. Stud.* 5, No. 1, 1937 (1-16). C.A.S.B. 4 (5).
- 633.34-2.19-1.811.3**—**Kornfeld, A.** A leaf spot disease of soybean—A potassium deficiency phenomenon. *Ztschr. Pflanz. Düng.* 32, 1933 (201-221). E.S.R. 71 (794). [G.]
- 633.34-2.19-1.811.3**—**Kornfeld, A.** Potassium as an essential nutrient for the soybean. *Ernähr. Pflanze* 30, 1934 (335-343). *Herb. Abs.* 5 (38).
- 633.34-2.19-1.811.3**—**Lowig, E.** Potash deficiency as a cause of retardation of ripening of the soybean. *Ernähr. Pflanze* 33, 1937 (74-75). [G.e.sp.]
- 633.35-1.811**—**Bruns, W.** Investigations of the nutrient uptake and moisture content of field beans. *J. Landw.* 83, 1935 (285-325).
- 633.364-1.461.52**—**Duggar, J. F.** Differences between Korean and other annual *Lespedeza*s in root nodule formation. *J. Amer. Soc. Agron.* 26, 1934 (917-919).
- 633.364-1.5**—**Mooers, C. A.; Ogden, H. P.** *Lespedeza sericea*. *Tenn. Agric. Expt. Sta. Bull.* 154, 1935, pp. 19.
- 633.364-1.582**—**Etheridge, W. C.; Helm, C. A.** Korean *lespedeza* in rotations of crops and pastures. *Missouri Agric. Expt. Sta. Bull.* 360, 1936, pp. 22.
- 633.366-1.81**—**Prince, F. S.; Blood, P. T. et al.** Fertilizer experiments with sweet clover. *N.H. Agric. Expt. Sta. Circ.* 47, 1935 (1-12). C.A. 29 (8207).
- 633.366-1.855-1.821.1: 581.192**—**Myers, H. E.; Metzger, W. H.** The influence of superphosphate and light lime applications alone and in combination on the composition of sweet clover. *J. Amer. Soc. Agron.* 28, 1936 (976-984).
- 633.367**—**Fischer, A.; Sengbusch, R. van.** The homes of *Lupinus albus*, *L. luteus* and *L. angustifolius*. The relation of the habitats of the wild lupin to the geological structure of the subsoil. The importance of wild forms in breeding. *Züchter* 7, 1935 (174-182). *Herb. Abs.* 6 (91).
- 633.367**—**Fischer, A.; Sengbusch, R. van.** The world's areas of lupin cultivation, with special reference to Europe. *Züchter* 7, 1935 (284-293, 321-324). *Herb. Abs.* 6 (90).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 633.367—Fischer, A.; Schwarze, P.; Sengbusch, R. van. The state of sweet lupin research and breeding. *ForschDienst.* 2, 1936 (38-57). G.
- 633.367-1.415.1—Hackbarth, J.; Meyle, A.; Sengbusch, R. van. The soil requirements of lupines. The significance of soil pH and the lime content of soil for lupines. *Deut. Landw. Pr.* 1935, No. 5-6. Z.P.D. 40 (372).\*
- 633.367-1.415.1—Surányi, F. Information on the soil requirement of lupins. *Köztelék* 45, 1935 (955-956). *Herb. Abs.* 6 (27).
- 633.367-1.584—Winnik, M. Composition of lupine at different growth stages, as related to its decomposition in the soil. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (226-229).
- 633.367-1.81—Molcan. The manuring of lupins. *Semenovodstvo* No. 7, 1935 (41). *Herb. Abs.* 6 (55).
- 633.367-1.81 : 581.192—Vasiliev, G. A. The agrotechnique of non-alkaloid lupins. *Khim. Selsk. Zemled.* No. 5, 1936 (100-108).
- 633.367-1.81 : 581.192—Wojtysiak, A. The influence of fertilizers on the chemical composition of yellow lupins. *Rocz. Nauk Roln.* 38, 1937 (169-204). P.
- 633.367-1.811—Merkenschlager, F. Bitter and sweet lupins. *Prakt. Bl. Pflbau.* 13, 1935 (149-159). *Herb. Abs.* 6 (90).
- 633.367-1.811.2—Klinkowski, M.; Richter, H. The nutritional physiology of the yellow and blue lupin. *Ponake Pflanze* 33, 1937 (81-84). G.
- 633.367-1.821.1 : 546.27—Nowotownna, A. The effect of boron on the development of lupins in limed soil. *Mon. Inst. Nat. Pol. Econ. Res. Pulawy*, 16, 1936 (49-72).
- 633.367-1.824—Duchon, F.; Provazek, J. The effect of calcium and magnesium carbonates on the development of lupin seedlings, particularly yellow lupins. *Sborn. Csl. Akad. Zeml.* 12, 1937 (62-71). Czech.
- 633.367-2.191-1.811.4—Schander, H. A contribution to the physiology of the "calcium chlorosis" of the lupin. *Ver. Ber. Bot. Ges.* 53, 1935 (807-810). G.
- 633.367-2.191-1.811.4—Parsche, F. The lime chlorosis of lupins. *Ztschr. Pflanz. Dung* 41, 1936 (282-312). G.
- 633.372-1.81—Zimmerle, H. An experiment with brassica *Sarothamnus scoparius* in which manures were used. *Soil* 25, 1937 (37-38). C.M.R. 5 (11).
- 633.375—Green, J. R.; Morris, H. E. A new legume in Montana. *J. Amer. Soc. Agron.* 27, 1935 (546-549).
- 633.375-1.461.52—Matsuura, A.; Itano, A. Nodule bacteria of *Astragalus sinicus* Genge. *Rep. Ohara Inst.* 6, 1934 (259-267). C.A. 29 (2280).
- 633.375-1.847.2—Thorne, D. W.; Walker, R. H. The influence of seed inoculation upon the growth of black locust seedlings. *J. Amer. Soc. Agron.* 28, 1936 (28-34).
- 633.376-1.5—Heinze, B. The importance of *Ornithopus sativus*. *Mitt. Landw.* 50, 1935 (316-317). *Herb. Abs.* 5 (235). G.
- 633.377-1.4—Garnett, C. B. Derris root. *E. Afric. Agric. J.* 2, 1936 (111-113).
- 633.377-1.5—Maas, J. G. J. A. Cultivation of derris. *Bergcultures*, Nos. 42/47, 1935 (53). *Hort. Abs.* 6 (310).

## FERTILIZERS AND GENERAL AGRONOMY

- 633.377-1.5**—**Milsum, J. N.** Derris cultivation in Perak. *Malay Agric. J.* 24, 1936 (390-392).
- 633.377-1.5**—**Legros, J.** Cultivation of Derris in the Far East. *Mo. Bull. Agric. Sci. Pract.* 23, 1937 (1T-12T).
- 633.377-1.5**—**Milsum, J. N.**; **Georgi, C. D. V.** Derris cultivation in Malaya. *Malay. Agric. J.* 25, 1937 (239-245).
- 633.377-1.81**—**Georgi, C. D. V.**; **Greig, J. L.**; **Teik, G. L.** Varietal and manurial trials with derris. *Malay. Agric. J.* 24, 1936 (268-281).
- 633.378-1.411.1**—**Fleischmann, R.** The future rôle of *Cicer arietinum* as a plant for sand soils. *Mezogazdaság* 12, 1935 (73-75). *Herb. Abs.* 6 (94).
- 633.379-1.415.1**—**Hester, J. B.** The influence of soil acidity and soil type upon the growth and composition of the lima bean plant. *Proc. Amer. Soc. Hort. Sci.* 32, 1934 (600-603). *C.A.* 29 (7552).

### 633.4 ROOT CROPS

- 633.41-1.811**—**Vincent**; **Herviaux**; **Sarazin.** Growth of high-yielding forage beet. *Ann. Agron.* 4 (n.s.), 1934 (793-809). *B.C.A.* 54 (199). *F.*
- 633.42-1.547.1-1.85**—**Hudson, A. W.**; **Woodcock, J. W.**; **Doak, B. W.** The effect of some phosphatic fertilizers and superphosphate-lime mixtures on turnip-seed germination. *N.Z. J. Sci. Tech.* 18, 1937 (739-749).
- 633.42-1.81**—**Becker, A.** The cultivation and nutrient requirements of rape and colza. *Ernähr. Pflanze* 32, 1937 (97-103). *G.e.*
- 633.42-1.828**: **546.331.31**—**Pichler, F.** Fertilizing turnips with rock salt. *Landeskultur* 1, 1934 (90). *Z.P.D.* 40 (373).
- 633.42-2.19**: **546.27**—**Henningsstad, A.** "Dropsy" in swedes is due to boron deficiency. *Meld. Stat. Forsøgsgård Forus* 1934, 1935 (1135-1138). *C.A.* 30 (7752).
- 633.42-2.19**: **546.27**—**O'Brien, D. G.**; **Dennis, R. W. G.** Raan or boron deficiency in swedes. *Scot. J. Agric.* 18, 1935 (326-331).
- 633.42-2.19**: **546.27**—**Whitehead, T.** "Brown heart", a new disease of swede, and its control. *Welsh J. Agric.* 11, 1935 (235-236). *C.A.* 30 (1500).
- 633.42-2.19**: **546.27**—**Hurst, R. R.**; **Macleod, D. J.** Turnip brown heart. *Sci. Agric.* 17, 1936 (209-214). *[E.I.]*
- 633.42-2.19**: **546.27**—**New Zealand Journal of Agriculture.** Brown-heart (mottled heart) in swedes. Report on field trials with borax. *N.Z. J. Agric.* 53, 1936 (99-104).
- 633.42-2.19**: **546.27**—**Coulson, J. G.**; **Raymond, L. C.** Progress report on the investigation of brown heart of swede turnips at Macdonald College. *Sci. Agric.* 17, 1937 (299-301).
- 633.42-2.19**: **546.27**—**Pope, H.** The "glassing" or brown heart of turnips and its control. *Deut. Landw. Pr.* 63, 1936 (603). *[G.]*
- 633.42-2.19**: **546.27**—**Donaldson, R. W.** Apply boron to prevent darkening of turnips. *Better Crops with Plant Food*, 21, 1937 (20-22, 36-37).
- 633.42-2.19**: **546.27**—**Hurst, R. R.** Brown heart of turnips. *Canada Dept. Agric. Pub.* 574, 1937, pp. 6.

# BIBLIOGRAPHY OF SOIL SCIENCE

- 633.42-2.19:546.27—Rigg, T.; Askew, H. O.; Chittenden, E.** Brown-heart of swedes and turnips in Nelson district: boron deficiency ailment. *N.Z. J. Sci. Tech.* 18, 1937 (750-755).
- 633.42-2.19:546.27—Woodcock, J. W.** Control of brown-heart in swedes. *N.Z. J. Agric.* 55, 1937 (151-154).
- 633.425:546.27—Jammalainen, E. A.** The effect of increasing amounts of boric acid on the yield of kohlrabi. *Matt. Aikak.* 7, 1935 (182-186). [G.F.]
- 633.491:546.47—Schreven, D. A. van.** Zinc as an essential element for sugar beet and potatoes. *Meded. Inst. Surkehoet.* 7, 1, 1937 (1-26). [Du.]
- 633.491-1.4:553.72—Houghland, G. V. C.** Reclamation of potato land flooded by salt water. *Amer. Potato J.* 14, 1937 (19-22). C.A. 31 (2731).
- 633.491-1.4-1.81—Brown, B. E.** Potato soil fertility and fertilizer literature for 1934. *Amer. Potato J.* 12, 1935 (254-257).
- 633.491-1.4-1.81—Smith, O.** Potato nutrition and soil fertility studies in 1935. *Amer. Potato J.* 13, 1936 (44-52). E.S.R. 75 (771).
- 633.491-1.411.4—Bauman, A.** Cultivation of root-crops and potatoes on peat soil. *Svenska Mosskoren. Tidskr.* 49, 1935 (175-177). [Sw.]
- 633.491-1.411.4—Bushnell, J.** Experiments with potatoes on muck soil. *Ohio Agric. Expt. Sta. Bull.* 570, 1936, pp. 25. E.S.R. 75 (772).
- 633.491-1.415.1—Smith, O.** Relation of soil reaction to yield and market quality of potatoes. *Ohio Veg. Grow. Ass. Proc.* 21st Ann. Meeting, 1936 (123-127). C.A. 30 (6494).
- 633.491-1.415.1—Smith, O.; Moore, G. C.** Effect of soil reaction on yield and market quality of potatoes. *Proc. Amer. Soc. Hort. Sci.* 32, 1935 (563-565). E.S.R. 75 (771).
- 633.491-1.415.1—Smith, O.** Effect of soil reaction on growth, yield, and market quality of potatoes. *Cornell Agric. Expt. Sta. Bull.* 664, 1937, pp. 21.
- 633.491-1.416—Smith, O.** Some factors affecting culinary quality in potatoes. *Amer. Potato J.* 14, 1937 (221-224). C.A. 31 (6800).
- 633.491-1.416.327—Vincent.** The action of boric acid on the production of potatoes. *Bull. Assoc. Franç. Ét. Sol.* 2, 1936 (302-303). [F.]
- 633.491-1.421—Livermore, J. R.** The potato field trial. *Amer. Potato J.* 12, 1935 (142-150).
- 633.491-1.432.2—Ensign, M. R.** Factors influencing growth and yield of potatoes in Florida. *Plant Physiol.* 10, 1935 (465-482). B.C.A. 55 (35).
- 633.491-1.433—Bushnell, J.** Sensitivity of the potato plant to soil aeration. *J. Amer. Soc. Agron.* 27, 1935 (251-253).
- 633.491-1.44—Gerlach, M.** The influence of locality on the yield of tubers and starch from potato plants. *Landw. Jahrb.* 83, 1936 (417-433). C.A. 31 (497). [G.]
- 633.491-1.44—Johnson, E. L.; Burke, M. M.** Tuber production of the Colorado wild potato as influenced by certain environmental factors. *Ecology* 18, 1937 (432-438).

## FERTILIZERS AND GENERAL AGRONOMY

- 633.491-1.5 Hardenburg, E. V.** Cultural and storage research with potatoes. *Amer. Potato J.* 13, 1936 (38-43). B.C.A. 56 (599).
- 633.491-1.58 Moore, G. C.** Soil and plant response to certain methods of potato cultivation. *Cornell Agric. Expt. Sta. Bull.* 662, 1937, pp. 48.
- 633.491-1.584 Hester, J. B.** The value of cover crops in potato production in eastern Virginia. *Amer. Potato J.* 14, 1937 (9-18). C.A. 31 (2730).
- 633.491-1.67 Werner, H. O.** Seed value of potatoes grown in different crop rotations with irrigation. *Amer. Potato J.* 12, 1935 (118-124). E.S.R. 73 (777).
- 633.491-1.81 Brown, G. G.** Influence of commercial fertilizers on yields, grades and value of potatoes in Hood River Valley. *Proc. Amer. Soc. Hort. Sci.* 29, 1933 (394-397). *Biol. Abs.* 9 (1354).
- 633.491-1.81 Borodich, D. I.** The effectiveness of mineral fertilizers on potatoes in the Kuban district. *Khim. Sotsial. Zemled.* No. 7, 1935 (25-35). [R.]
- 633.491-1.81 Brown, B. A.** Fertilizers for potatoes. Second report. *Conn. Agric. Expt. Sta. Bull.* 203, 1935 (3-18). C.A. 29 (8208).
- 633.491-1.81 Camargo, T.; Krug, C. A.** Experiments on the manuring of potatoes. *Bol. Tec. Inst. Agron. São Paulo*, No. 16, 1935, pp. 36. [Ptc.]
- 633.491-1.81 Harrington, F. M.** Influence of fertilizers on maturity and type of potatoes. *Proc. Amer. Soc. Hort. Sci.* 32, 1935 (560-562). E.S.R. 75 (771).
- 633.491-1.81 Brown, B. E.** Some changes in potato fertilizer use. *Amer. Potato J.* 13, 1936 (327-339). E.S.R. 76 (784).
- 633.491-1.81 Harrington, F. M.** Influence of fertilizer on potato maturity and type. *Amer. Potato J.* 13, 1936 (218-220). C.A. 30 (7756).
- 633.491-1.81 Miller, J. C.; Kimbrough, W. D.** Irish-potato investigations. *Ind. Agric. Expt. Sta. Bull.* 272, 1936 (2-13). C.A. 30 (5708).
- 633.491-1.81 Ramsay, J. T.** Manurial trials on potatoes. Results for 1935-36. *J. Dept. Agric. Victoria*, 35, 1937 (38-42).
- 633.491-1.81 : 541.132 Böning, K.** Influence of the anions of fertilizer salts on decomposition and degeneration of potatoes. *Angew. Bot.* 17, 1935 (323-335). B.C.A. 55 (385).
- 633.491-1.81 : 581.192 Oskierski.** Fertilizing potatoes with particular reference to the yield of starch. *Kartoffelbau* 18, 1934 (60). Z.P.D. 38 (180). [G.]
- 633.491-1.81 : 581.192 Fürst, F.** The influence of fertilizing on the table value of potatoes. *Prakt. Bl. Pflbau.* 12, 1934/35 (71). Z.P.D. 38 (175). [G.]
- 633.491-1.81 : 581.192 Gray, M. G.** Manurial treatment and its effect on cooking quality in potatoes. *Tasmanian J. Agric.* 6, 1935 (80-84).
- 633.491-1.81 : 581.192 Gray, M. G.** Manurial treatment and its effect on cooking quality in potatoes. *Tasmanian J. Agric.* 7, 1936 (68-72).
- 633.491-1.81 : 581.192 Mangold, E.** Organic and mineral nutrients in German potatoes. *Ztschr. Spiritusindust.* 59, 1936 (17) *Nutr. Abst.* 6 (305).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 633.491-1.81 : 581.192**—Itallie, T. B. van. The effect of fertilizers on the starch of starch-factory potatoes. *Cong. Int. Tech. Chim. Indust. Agric. Fifth Cong. Scheveningen, 1937* (263-267). [G.F.]
- 633.491-1.811**—Blanck, E.; Heukeshoven, W. Further contributions to the cause of nutrient assimilation of plants, particularly the potato. *J. Landw.* 83, 1935 (43-62). [G.]
- 633.491-1.811**—Carolus, R. L. Chemical estimation of the weekly nutrient level of a potato crop. *Amer. Potato J.* 14, 1937 (141-153). C.A. 31 (5921).
- 638.491-1.811.1.2**—Emmert, E. M. The correlation of soluble nitrogen and phosphate phosphorus in the conducting tissues of potatoes at various stages of growth with yield. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (589-594).
- 633.491-1.811.8**—Baslavskaja, S. S.; Syroeshkina, M. I. Influence of Cl-ion on the chlorophyll content of potatoes. *Trudy Nauch. Inst. Udob.* No. 130, 1936 (48-57). [R.g.]
- 633.491-1.816.3**—Bushnell, J. Injury to potatoes from improper placement of fertilizer. *Ohio Veg. Grow. Assoc. Proc. 18th Ann. Meeting*, 1933 (105-110). C.A. 28 (6912).
- 633.491-1.816.3**—Brown, B. E.; Cumings, G. A. Fertilizer placement studies with the potato on prominent soil types in 1932. *Amer. Potato J.* 11, 1934 (141-147). E.S.R. 71 (767).
- 633.491-1.816.3**—Brown, B. E.; Cumings, G. A. Fertilizer placement studies with potatoes in 1934. *Amer. Potato J.* 12, 1935 (178-182). E.S.R. 73 (609).
- 633.491-1.816.3**—Chucka, J. A.; Lovejoy, D. B.; Brown, B. Potato fertilizer investigations. *Mo. Agric. Expt. Sta. Bull.* 380, 1935 (147-150). C.A. 30 (5710).
- 633.491-1.816.3**—Brown, B. E.; Cumings, G. A. Fertilizer placement for potatoes. *Amer. Potato J.* 13, 1936 (269-272). E.S.R. 76 (620).
- 633.491-1.816.3**—Houghland, G. V. C.; Cumings, G. A. Another method of fertilizer distribution for potatoes. *Amer. Pot.* 84, May 2, 1936 (7-8, 24).
- 633.491-1.816.3**—Bushnell, J. Fertilizers in the subsoil for potatoes. *Ohio Veg. Grow. Assoc. Proc. 22nd Ann. Meeting*, 1937 (67-69). C.A. 31 (4760).
- 633.491-1.821.1**—Hester, J. B. Influence of lime upon soil reaction and yield of Irish potatoes. *Trans. Pennsylv. Hort. Soc.* 1934 (45-51). C.A. 29 (4868).
- 633.491-1.821.1**—Hester, J. B. The rational use of lime on potato production in eastern Virginia. *Va. Truck Expt. Sta. Bull.* 83, 1934 (1137-1154). E.S.R. 73 (609).
- 633.491-1.821.1**—Hester, J. B. Results from the lime experiment with potatoes for 1936. *Amer. Potato J.* 13, 1936 (339-342). E.S.R. 76 (784).
- 633.491-1.821.1**—Vlasova, V. M. The effect of lime on potatoes. *Khim. Sotsial. Zemled.* No. 3, 1937 (16-30). [R.g.]
- 633.491-1.824**—Brown, B. A. Magnesium and lime for potatoes in Connecticut. *Amer. Potato J.* 13, 1936 (3-8). C.A. 30 (3574).
- 633.491-1.828**—Eddins, A. H. Effect of inoculated sulfur, lime and mercury compounds on the yield of potatoes. *Amer. Potato J.* 11, 1934 (295-302). C.A. 29 (1569).

## FERTILIZERS AND GENERAL AGRONOMY

**633.491-1.828—Cooper, H. P. ; Moore, D. ; Wallace, R. W.** Irish potato fertilizer experiments. *S.C. Agric. Expt. Sta. Circ.* 55, 1936 (3-12). C.A. 31 (798).

**633.491-1.828—Hester, J. B. ; Carolus, R. L.** Three years' results with the use of copper, manganese and zinc sulphates in fertilizer for potatoes. *Amer. Potato J.* 14, 1937 (37-39). C.A. 31 (4439).

**633.491-1.83—Gerlach.** Experiments on the potash fertilizing of potatoes. *Kartoffel* 14, 1934 (35). Z.P.D. 37 (126). [G.]

**633.491-1.83—Berkner, F.** Is it possible to influence the course of nutrient uptake of early, medium and late potato varieties by different forms and times of application of potash? *Landw. Jahrb.* 81, 1935 (71-79). [G.]

**633.491-1.83—Berkner, F.** The influence of residual potash fertilizing on the catabolism, the nutrient assimilation and the later yield of potato plants. *Landw. Jahrb.* 81, 1935 (393-423). [G.]

**633.491-1.83—Berkner, F.** The residual effect of different potash fertilizers and the planting time in the previous year on the seedling value of potatoes. *Landw. Jahrb.* 82, 1935 (125-139). [G.]

**633.491-1.83—Berkner, F.** The course of nutrient uptake, with varied planting date, of potatoes treated by the Breslau method as affected by the type of potash fertilizer. *Landw. Jahrb.* 82, 1935 (141-159). [G.]

**633.491-1.83—Kuhnke, A.** The influence of excessive application of potash on the yield and starch content of potatoes and the subsequent effect on the quality of the seed. *Ernähr. Pflanze* 31, 1935 (234-235). [G.]

**633.491-1.83—Kuhnke, A.** The influence of excess of potash fertilizer on the yield and starch content of potatoes and their further effects on crop value. *Kartoffelbau* 19, 1935 (78). Z.P.D. 44 (178). [G.]

**633.491-1.83—Pinn, A. J. ; Davis, G. de Vahl.** Potatoes and potash. *Agric. Gaz. N.S.W.* 46, 1935 (11-12).

**633.491-1.83—Wöhlbier, W. ; Meifert, K.** Influence of potash fertilizing on the starch content of potatoes. *Bied. Zbl.* 6, 1936 (321-333). [G.]

**633.491-1.83—Berkner, F.** Influence of different sowing times and potash fertilizing on the yield and soundness of potatoes. *Landw. Jahrb.* 84, 1937 (581-602). [G.]

**633.491-1.83—Nemec, A.** The effect of potash fertilizers in increasing potato yields, with special reference to soil reaction. *Ernähr. Pflanze* 33, 1937 (161-165). [G.e.]

**633.491-1.84—Rappe, G.** Effect of manuring, especially with nitrogen, on the productivity of seed potatoes. *Svenska Mosskiferen. Tidskr.* 50, 1936 (3-39). [Sw.e.]

**633.491-1.841.5—Engels, O.** Effect of granulated calcium cyanamide and ground calcium cyanamide on the yield and starch content of potatoes. *Deut. Landw. Pr.* 62, 1935 (547-548, 561). C.A. 30 (2305). [G.]

**633.491-1.841.5—Sherard, H.** The comparative value of calcium cyanamide and ammonium sulphate on the yield of Irish potatoes on Bladen fine sand. *Amer. Potato J.* 12, 1935 (86-90). C.A. 29 (5579).



## BIBLIOGRAPHY OF SOIL SCIENCE

- 633.491-1.85—Harrington, F. M.; Pollinger, W. E. Phosphorus responses on potatoes. *Mont. Agric. Expt. Sta. Bull.* 334, 1937, pp. 22. E.S.R. 77 (166).
- 633.491-1.86:581.192—Nemec, A. A note on the effect of farmyard manure additions on the starch content of potatoes. *Ztschr. Pflanz. Düng.* 38, 1935 (239-241). (G.)
- 633.491-1.874:633.15—Bushnell, J. Non-legumes as green manures for potatoes. *Proc. Amer. Soc. Hort. Sci.* 32, 1935 (566-568). E.S.R. 75 (772).
- 633.491-2.112—Clements, H. F. Drought resistance of sunflower and potato. *Wash. St. Coll. Res. Stud.* 5, 1937 (81-98). C.A.S.B. 4 (5).
- 633.491-2.19:546.27—O'Brien, D. G.; Dennis, R. W. G. Place of boron in potato cultivation. *Soil. Fertil.* March 14, 1936, pp. 4.
- 633.491-2.19-1.81—Reinmuth, E.; Finkenbrink, W. Experiments on iron spotting of the potato. *Ztschr. Pflanz. Krankh. Pflanzschut.* 43, 1933 (21-28). (G.)
- 633.491-2.19-1.811.2—Van der Plank, J. C. Internal brown fleck, a phosphorus deficiency disease of potatoes grown on acid soils. *S. Afric. Dept. Agric. Sci. Bull.* 156, 1936, pp. 22. R.A.M. 16 (629). C.A. 31 (4043).
- 633.491-2.19-1.811.3—Rohde, G. Potash deficiency symptoms of potatoes. *Kartoffelan* 19, 1935 (73). Z.P.D. 44 (178). (G.)
- 633.491-2.19-1.811.4—Schreven, D. A. van. Lime deficiency as the cause of medullary necrosis of potato tubers. *Duitsche. Pflanzenzucht.* 40, 1934 (225-255). C.A. 29 (5572).
- 633.491-2.19-1.811.4—Muller, H. R. A. Calcium deficiency and medullary necrosis (rusty spot disease) of potato tubers. *Landbouw* 11, 1936 (345-369). R.A.M. 16 (118). C.A. 31 (3619).
- 633.491-2.19-1.811.6—Bonde, R. Potato spraying: value of late applications of magnesium-Bordeaux. *Amer. Potato J.* 11, 1934 (152-156). B.C.A. 54 (516).
- 633.491-2.19-1.811.6—Brown, B. E. Magnesium deficiency in certain soil types reduces potato yields. *U.S.D.A. Yrbk.* 1934 (258-261). E.S.R. 72 (64).
- 633.491-2.19-1.811.6—MacLeod, D. J.; Howatt, J. L. Magnesium deficiency in potatoes. *Canad. Phytopath. Soc. Ann. Meet. Sci. Agric.* 15, 1935 (435).
- 633.491-2.2—Blenkinsop, A. Observations on potato-sick soils in Devon and Cornwall. *J. Min. Agric.* 41, 1935 (1187-1189).
- 633.491-2.2—Jary, S. G.; Travers, S. J. "Potato sickness" on allotments at New Romney. *J.S.A. Agric. Coll. Wv.* No. 36, 1935 (100-102). C.A. 30 (215).
- 633.491-2.2-1.415.1—Robertson, D. Observations on the potato eelworm. *Soil. J. Agric.* 29, 1937 (264-272).
- 633.491-2.2-1.84—Walton, C. L.; Ogilvie, L.; Hickman, C. J. The effect of nitrogenous fertilizers on potatoes affected with potato "sickness". *J. Bath and West Soc.* 11, 1937 (129-134).
- 633.491-2.2-1.841.5—Edwards, E. E. Field experiments on control of the "potato sickness" associated with the nematode, *Heterodera schachtii*. *J. Helminth.* 15, 1937 (77-96). C.A. 31 (5922).

## FERTILIZERS AND GENERAL AGRONOMY

- 633.491-2.2-2.953—Hurst, R. H.; Triffitt, M. J.** Experiments on the control of "potato-sickness" by the addition of certain chemicals to soil infected with *Heterodera Schachtii*. *J. Helminth.* 13, 1935 (191-200). E.S.R. 76 (58).
- 633.491-2.2-2.953—Johnson, L. R.** Mercuric chloride for prevention of potato sickness. *Ann. Appl. Biol.* 23, 1936 (153-164). B.C.A. 56 (72).
- 633.491-2.3: 546.22—Eddins, A. H.** Soil treatment with sulfur and limestone for control of bacterial wilt of potatoes. *Phytopath.* 25, 1935 (16). C.A. 29 (2286).
- 633.491-2.3: 546.22—Eddins, A. H.** Bacterial wilt of potatoes, tomatoes, and egg plant controlled with sulfur and limestone. *Phytopath.* 26, 1936 (91). B.C.A. 56 (1105).
- 633.491-2.3-1.86—Ruschmann, G.** The action of farmyard manure and Edelmist. *Landw. Jahrb.* 84, 1937 (264-278). [G.]
- 633.491-2.4: 546.22—Eddins, A. H.** Brown rot of Irish potatoes and its control. *Fla. Agric. Expt. Sta. Bull.* 299, 1936, pp. 44.
- 633.491-2.4-1.4—Crosier, W.; Reddick, D.** Some ecologic relations of the potato and its chief fungous parasite, *Phytophthora infestans*. *Amer. Potato J.* 12, 1935 (205-218).
- 633.491-2.4-1.4—Cairns, H.; Greeves, T. N.; Muskett, A. E.** The control of common scab (*Actinomyces scabies* [Thaxt.] Güss.) of the potato by tuber disinfection. *Ann. Appl. Biol.* 23, 1936 (718-742).
- 633.491-2.4-1.415.1—Dippenaar, B. J.** Environmental and control studies of common scab of potatoes caused by *Actinomyces scabies* [Thaxt.] Güss. *S. Africa Dept. Agric. Sci. Bull.* No. 136, 1933, pp. 78. B.C.A. 56 (712).
- 633.491-2.4-1.415.1—Pierstorff, A. L.** Soil acidity and scab control. *Ohio Veg. Grow. Assoc. 18th Ann. Meeting*, 1933 (87-93). C.A. 28 (6918).
- 633.491-2.4-1.415.1—Albert, A. R.; Milward, J. G.; Walker, J. G.** Methods of controlling potato scab. *Wis. Agric. Expt. Sta. Bull.* 430, 1935 (28-31). C.A. 30 (803).
- 633.491-2.4-1.415.1—Blodgett, F. M.; Cowan, E. K.** Relative effects of calcium and acidity of the soil on the occurrence of potato scab. *Amer. Potato J.* 12, 1935 (265-274). C.A. 30 (1169).
- 633.491-2.4-1.416—Nemec, A.** The chemical composition of potato soils infected with black scab. *Phytopath. Ztschr.* 8, 1935 (303-305).
- 633.491-2.4-1.466.2—Latman, B. F.; Livingston, R. J.; Schmidt, A. M.** Soil actinomycetes and potato scab. *Fla. Agric. Expt. Sta. Bull.* 401, 1936 (3-31).
- 633.491-2.4-1.582—Chamberlain, E. E.** Corticium-disease of potatoes. The effect of crop rotation on its persistence in the soil. *N.Z.J. Agric.* 5, 1935 (287-289).
- 633.491-2.4-1.81—Elchinger.** Potato scab and manuring. *Kartoffelbau* 19, 1935 (89). *Z.P.D.* 44 (179). [G.]
- 633.491-2.4-1.813—Berkner, F.** The effect of a physiologically acid or alkaline fertilizing on yield, scab occurrence and iron chlorosis of three genetically and ecologically different potato varieties. *Ztschr. Pflanz. Düng.* 45, 1936 (205-215). [G.]

## BIBLIOGRAPHY OF SOIL SCIENCE

**633.491-2.4-1.87—Rheinwald, H.** Experiment on the scab preventing effect of Nettolin with potatoes. *Landw. VersSta.* 123, 1935 (205-207). [G.]

**633.491-2.8-1.4—Ludwik, G.** The effect of soil on the development of streak mosaic in experiment with *Industria* of Modrow, a potato variety. *Rocz. Nauk Roln.* 41, 1937 (387-391). [P.e.]

**633.492-1.5—Wood, R. C.** Sweet potato experiments. *Emp. J. Expt. Agric.* 5, 1937 (231-238).

**633.492-1.83—Beattie, J. H. ; McCown, J. D. ; Hall, E. E.** The effect of varying amounts of potash on grade and yield of the Porto Rico sweet potato. *Proc. Amer. Soc. Hort. Sci.* 30, 1933 (534-537). E.S.R. 72 (331).

## 633.5 FIBRE PLANTS

**633.51-1.4—Hosking, N. R.** The unsuitability of certain virgin soils to the growth of grain crops. II. *E. Afric. Agric. J.* 2, 1937 (313-314).

**633.51-1.416—Knauer, R.** Cotton cultivation and soil investigations in the State of São Paulo. *Ernähr. Pflanze* 33, 1937 (208-210). [G.e. sp.]

**633.51-1.416.13—Greene, H.** Soil nitrates in the Sudan. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (217-219).

**633.51-1.417.4—Pavlov, G. I.** Crop rotation and agrotechnical measures taken under the conditions of large scale cotton cultivation in Uzbekistan. *Sborn. Uzbekistan* 3, 1934 (243-251). *Pedology* 1936 (659).

**633.51-1.432.2—Luthra, J. C. ; Chhima, I. S.** Some studies on temperature of the cotton plant in the Punjab. *Proc. Indian Acad. Sci.* 6B, 1937 (131-169).

**633.51-1.434—Heath, O. V. S.** A study in soil cultivation. The effects of varying soil consolidation on growth and development of rain-grown cotton. *J. Agric. Sci.* 27, 1937 (511-540).

**633.51-1.436.5—Jackson, F. K.** Health and vigour of the cotton plant in relation to environment. *Emp. Cott. Grow. Corp.* 2nd Conf. 1934 (199-205). B.C.A. 54 (821).

**633.51-1.44 : 581.192—Pope, O. A.** Effect of certain soil types, seasonal conditions, and fertilizer treatments on length and strength of cotton fiber. *Ark. Agric. Expt. Sta. Bull.* 319, 1935, pp. 98.

**633.51-1.445.52—Platenko, A. I.** Character and degree of salinity of soils in the cotton region of Tadzhikistan. *Khm. Sotsial. Zemled.* No. 7, 1935 (13-17). [R.]

**633.51-1.544.7—Knight, R. L.** The effect of shade on American cotton. *Emp. J. Expt. Agric.* 3, 1935 (31-40).

**633.51-1.582—Wells, W. G.** Cotton rotations. *Queensland Agric. J.* 44, 1935 (182-190).

**633.51-1.582—Wells, W. G.** The cotton industry. *Queensland Agric. J.* 46, 1936 (59-63).

**633.51-1.62—Sudan Government.** Gezira Annual Report. The effect of waterlogging and drainage on the growth and yield of cotton. *Gezira Res. Serv. Ann. Rept.* 1933 (74-78).

**633.51-1.67—Hastings, S. H. ; Noble, E. G.** Pima-Egyptian cotton in irrigated rotations at the Youma Field Station, Bard.

## FERTILIZERS AND GENERAL AGRONOMY

California. *U.S.D.A. Tech. Bull.* 309, 1933, pp. 30. *Emp. Cot. Grow. Rev.* 11 (243).

**633.51-1.67—Leding, A. R.** Effect of plant spacing and irrigation on number of locks in cotton bolls. *J. Agric. Res.* 47, 1933 (33-52).

**633.51-1.67—Shorikov, F.** The influence of irrigation on the agro-chemical properties of soil under cotton and lucerne. *Pedology* 4, 1933 (318). *Z.P.D.* 37 (236).

**633.51-1.67—Crowther, F.** Growth analysis of the cotton plant under irrigation in the Sudan. I. Effects of different combinations of nitrogen and water supply. *Ann. Bot.* 48, 1934 (877-913). *B.C.A.* 54 (73).

**633.51-1.67—Malygin, V. S.** New agrotechnique in irrigated cotton districts. *Sborn. Uzbekistan* 3, 1934 (253-258). *Pedology* 1936 (659).

**633.51-1.67—Starov, P. V.** Irrigation of cotton during ripening. *Borba za Khlopok* 6-7, 1934 (33-38). [R.]

**633.51-1.67—Lambert, A. R.; Crowther, F.** Further experiments on the interrelation of factors controlling the production of cotton under irrigation in the Sudan. Pt. I. Experimental. Pt. II. Results and conclusions. *Emp. J. Expt. Agric.* 3, 1935 (276-294).

**633.51-1.67—Penzin, Y. E.; Votselka, K. G.** The value of irrigation for increasing cotton yields in Dagestan. *Khim. Sotsial. Zemled.* Nos. 2-3, 1936 (76-82). [R.]

**633.51-1.67—McDowell, G. H.** Irrigation requirements of cotton and grain sorghum in the Wichita valley of Texas. *Tex. Agric. Expt. Sta. Bull.* 543, 1937, pp. 32.

**633.51-1.67-1.46—Panosian, A. K.** The effect of the infiltration method of irrigation of cotton on the microbiology of the soil. *Mikrobiologia* 4, 1936 (625-635). [R.]

**633.51-1.81—Pope, O. A.** Influence of different rates of fertilizer on certain fibre and seed characters in cotton. *Ark. Agric. Expt. Sta. Bull.* 280, 1932 (31-32). *C.A.* 28 (7405).

**633.51-1.81—Chumanov, Y. I.** The economic value of mineral fertilizers judged by experiments on the sovkhoz "Dal'verzint" during 1933. *Borba za Khlopok* 6-7, 1934 (39-44). [R.]

**633.51-1.81—Schreiner, O.; Skinner, J. J.** Adaptation of fertilizers for cotton soils. *Amer. Fert.* 81, No. 12, 1934 (5-7). *E.S.R.* 73 (313).

**633.51-1.81—Baltazar, E. P.; Apellido, N. A.** The effect of a 3-9-3 fertilizer mixture on the growth and yield of the cotton plant. *Philipp. Agrist.* 24, 1935 (464-480).

**633.51-1.81—Gracie, D. S.; Khalil, F.; Enan, H.** An analysis of the factors governing the response to manuring of cotton in Egypt. *Egypt. Min. Agric. Bull.* 152, 1935, pp. 71.

**633.51-1.81—Parham, S. A.** Cotton fertilizer formula tests. *Cal. Coast. Pl. Expt. Sta. Bull.* 25, 1935 (13-19). *C.A.* 30 (5348).

**633.51-1.81—Reynolds, E. B.; Stansel, R. H.** Effect of fertilizers on the length of cotton fibre. *J. Amer. Soc. Agron.* 27, 1935 (408-411).

**633.51-1.81—Aleksandrov, V. G.** Cotton manuring in the dry region of the south of the U.S.S.R. *Khim. Sotsial. Zemled.* Nos. 7-8, 1936 (14-25). [R.]

# BIBLIOGRAPHY OF SOIL SCIENCE

**633.51-1.81—Crowther, F. ; Tomforde, A. ; Mahmoud, A.** Nitrogenous and phosphatic manuring of cotton and their relation to variety and spacing. *Roy. Agric. Soc. Egypt Tech. Sect. Bull.* 26, 1936, pp. 46.

**633.51-1.81—Poltoratsky, V. V.** The relation of mineral fertilizers to other agricultural factors affecting cotton yields. *Bull. Soius NIKhI*, No. 1, 1936 (16-58). [R.e.]

**633.51-1.81—Bledsoe, R. P. ; Stacy, S. V. ; Skinner, J. J.** Cotton fertilizers for Georgia soils. *Ga. Agric. Expt. Sta. Bull.* 196, 1937, pp. 202. E.S.R. 77 (328).

**633.51-1.81—Crowther, F.** Experiments in Egypt on the interaction of factors in crop growth. 7. The influence of manuring on the development of the cotton crop. *Roy. Agric. Soc. Egypt Tech. Sect. Bull.* 31, 1937, pp. 67.

**633.51-1.81—Crowther, F.** Multiple-factor experiments on the manuring of cotton in Egypt. *Emp. J. Expt. Agric.* 5, 1937 (169-179).

**633.51-1.81—Crowther, F. ; Tomforde, A. ; Mahmoud, A.** Experiments in Egypt on the interaction of factors in crop growth. 8. Manuring of cotton in Egypt. *Roy. Agric. Soc. Egypt Tech. Sect. Bull.* 32, 1937, pp. 38.

**633.51-1.81—Joachim, A. W. R. ; Paul, W. R. C. ; Pieris, H. A.** Manurial trials with cotton in Ceylon. *Trop. Agricult.* 89, 1937 (8-24).

**633.51-1.81—Nelson, M.** Fertilizer experiments with cotton in type-of-farming areas. *Ark. Agric. Expt. Sta. Bull.* 346, 1937, pp. 41.

**633.51-1.81—Skinner, J. J. ; Mann, H. B. ; Collins, E. R. et al.** Adapting high analysis and concentrated fertilizers to cotton soils. *Soil Sci.* 44, 1937 (1-22).

**633.51-1.81 ; 581.192—Ergle, D. R.** Carbohydrate content of cotton plants at different growth periods and the influence of fertilizers. *J. Amer. Soc. Agron.* 28, 1936 (775-786).

**633.51-1.81 ; 581.192—Collins, E. R. ; Rigler, N. E.** Effect of fertilizers on some nitrogenous and other constituents of the cotton plant as separated by electrolysis at different stages of growth. *Soil Sci.* 44, 1937 (217-227).

**633.51-1.811—Gregory, F. G.** Some outstanding physiological problems in the culture of cotton in the Sudan. *Emp. Coll. Grow. Corp. 2nd Conf.* 1934 (206-212). B.C.A. 54 (821).

**633.51-1.811—Crowther, F. ; Mahmoud, A.** Experiments in Egypt on the interaction of factors in crop growth. 1. A preliminary investigation of the interrelation of variety, spacing, nitrogen and water supply, with reference to yields of cotton. *Roy. Agric. Soc. Egypt Tech. Sect. Bull.* 22, 1935, pp. 33.

**633.51-1.811—Paden, W. R.** Relation of fertilizer treatments to the mineral nutrients in sap and tissue of the cotton plant. *Proc. Assoc. S. Agric. Workers 34th, 35th and 36th Ann. Con.* 1933-1935 (473-474). C.A. 30 (2682).

**633.51-1.811—Murphy, H. F.** Nitrogen, phosphorus and calcium contents of the cotton plant at pre-blooming to early boll stages of growth. *J. Amer. Soc. Agron.* 28, 1936 (52-57). B.C.A. 55 (659).

**633.51-1.811—Hosking, H. K.** The vegetative and nitrogen efficiency of the cotton plant in Uganda. *E. Afric. Agric. J.* 2, 1937 (486-490).

## FERTILIZERS AND GENERAL AGRONOMY

- 633.51-1.811.91—Greene, H. ; Snow, O. W.** The moisture content of irrigated cotton plots. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (1-4).
- 633.51-1.811.91—Petrov, E. G.** The water balance of cotton fields. *Trudy Inst. Hydrotekh.* 11, 1935 (165-178). *Pedology* 1936 (948). [R.]
- 633.51-1.811.91—Zivinsky, V. I.** Critical periods with the cotton plant. *C.R. Acad. Sci. (U.S.S.R.)* 1, 1935 (668-673). *Bied. Zbl.* 65 (353).
- 633.51-1.811.91—Greene, H.** Water duty trials in the Sudan Gezira. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (166-169).
- 633.51-1.811.91—Arndt, C. H.** Water absorption in the cotton plant as affected by soil and water temperatures. *Plant Physiol.* 12, 1937 (703-720).
- 633.51-1.816.2—Starov, P. V.** Irrigation and manuring of cotton. *Borba za Khlopok* 3-4, 1935 (41-48). [R.]
- 633.51-1.816.2—Kharkov, D. V. ; Palmenevsky, P. N.** Autumn application of fertilizers under ordinary farming conditions. *Bull. Soius NIKhI.* No. 1, 1936 (70-77). [R.e.]
- 633.51-1.816.2-1.84—Pershakova, L. I.** Autumn application of nitrogenous fertilizers. *Bull. Soius NIKhI.* 1, 1936 (3-11). [R.e.]
- 633.51-1.816.3—Kharkov, D. V.** How to apply mineral fertilizers to cotton during the vegetative period. *Borba za Khlopok* 5-6, 1935 (53-58). [R.]
- 633.51-1.816.3—Malinkin, N. P.** An experiment on the application of ammonium nitrate to cotton in the solution form during the vegetative period. *Borba za Khlopok* 5-6, 1935 (117-120).
- 633.51-1.816.3—Prosnikov, I. T.** Experiments with the application of fertilizers under cotton in the form of solutions. *Bull. Soius NIKhI.* 4, 1936 (22-27). [R.e.]
- 633.51-1.816.3—Smith, H. P. ; Morris, H. F. ; Byrom, M. H.** Machine placement of fertilizer for cotton. *Tex. Agric. Expt. Sta. Bull.* 548, 1937, pp. 52. *Amer. Fert.* 87, Oct. 30, 1937 (12).
- 633.51-1.816.3 : 581.144.2—Neshina, A. V.** The development of cotton root system as affected by the methods of fertilizer application. *Bull. Soius NIKhI.* 4, 1936 (28-44). [R.e.]
- 633.51-1.821.2—Sudan Government, Gezira Annual Report.** Immediate and residual effect of gypsum on cotton yield. *Gezira Res. Serv. Ann. Rept.* 1933 (92-94).
- 633.51-1.821.2—Novikov, V. A.** The effect of calcium on the growth of cotton transplants. *Bull. Sredneaz. Nauch. Inst. Khlopokov.* No. 2, 1934 (52-54). [R.e.]
- 633.51-1.83—Golodkovsky, L. L.** Experiments with potassium fertilizers for cotton and alfalfa. *Bull. Soius NIKhI.* 4, 1936 (45-63). [R.e.]
- 633.51-1.83—Kudrin, S. A.** Potassium fertilizers for cotton. *Trudy Belorussk. S.-Kh. Inst.* 5, 1936 (59-69). [R.e.]
- 633.51-1.84.5—Crowther, F. ; Tomforde, A. ; Mahmoud, A.** Experiments in Egypt on the interaction of factors in crop growth. 6. Further experiments on the nitrogenous and phosphatic manuring of cotton. *Rov. Agric. Soc. Egypt Tech. Ser. Bull.* 30, 1937, pp. 55.

# BIBLIOGRAPHY OF SOIL SCIENCE

- 633.51-1.84—Skinner, J. J. ; Lineberry, R. A., et al.** Experiments with nitrogenous fertilizers on cotton soils. *U.S.D.A. Tech. Bull.* 452, 1934, pp. 28.
- 633.51-1.84—Kuykendall, R.** Twelve years' results with nitrogenous fertilizers on cotton and corn. *Proc. Assoc. S. Agric. Workers 34th, 35th and 36th Ann., Congr.* 1933 35 (75-76). C. A. 30 (2682).
- 633.51-1.84—Crowther, F.** Experiments in Egypt on the interaction of factors in crop growth. *Roy. Agric. Soc. Egypt Tech. Sect. Bull.* 24, 1936, pp. 35, 25, 1936, pp. 50.
- 633.51-1.84 : 546.27—Holley, K. T. ; Dulin, T. G.** A study of ammonia and nitrogen for cotton. III, IV. *Gen. Agric. Expt. Sta. Bull.* 197, 1937, pp. 24. E.S.R. 77 (328).
- 633.51-1.842.3—Cooper, H. P. ; Hall, E. E. ; Rogers, W. B. et al.** Relative value of different brands of sodium nitrate in cotton production. *S.C. Agric. Expt. Sta. Cir.* 56, 1937 (1-2). C.A. 31 (5091).
- 633.51-1.842.4—Malinkin, N. P.** Preliminary data on the application of ammonium nitrate solution under growing cotton. *Bull. Sov. NIKhI* No. 2, 1935 (108-110). R.e.]
- 633.51-1.855—Williamson, J. T.** Efficiency of ammoniated superphosphates for cotton. *J. Amer. Soc. Agron.* 27, 1935 (724-728).
- 633.51-1.874—Matveev, S. K. ; Baiandina, A. P.** Ploughing under winter peas as green manure and its effect on cotton seedlings. *Bull. Sov. NIKhI* No. 2, 1935 (93-107). *Heb. Abs.* 6 (253). R.e.]
- 633.51-1.874—Hale, G. A.** A comparison of winter legume green manure and nitrate of soda for fertilizing cotton. *J. Amer. Soc. Agron.* 28, 1936 (156-159).
- 633.51-2.1.67—Hope, C. ; King, C. J. ; Parker, O.** The effect of crazy top disorder on cotton plants and its control by irrigation management. *U.S.D.A. Tech. Bull.* 515, 1936, pp. 44.
- 633.51-2.4—Jordan, H. V. ; Ergle, D. R. ; Hunter, J. H. et al.** Pigmentation in the root of the cotton plant. *Science* 86, 1937 (60-61).
- 633.51-2.4—Thorn, G. ; Morrow, M. B.** Experiments with mold inoculation in cotton root rot areas. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (223).
- 633.51-2.4-1.415.1—Taubenhaus, J. J. ; Ezekiel, W. N. ; Fudge, J. F.** Relation of soil acidity to cotton root rot. *Tex. Agric. Expt. Sta. Bull.* 545, 1937, pp. 39.
- 633.51-2.4-1.416—Fraps, G. S. ; Fudge, J. F.** Relation of the occurrence of cotton root rot to the chemical composition of soils. *Tex. Agric. Expt. Sta. Bull.* 522, 1935, pp. 21. C.A. 30 (3564).
- 633.51-2.4-1.416—Ambegaokar, Wad, Y. D.** Studies in disease resistance. I. Cotton wilt and environment. *Proc. Indian Acad. Sci.* 3B, 1936 (502-526).
- 633.51-2.4-1.427.2—Eaton, E. D. ; King, C. J.** Study of the cotton root-rot fungus (*Phymatotrichum omnivorum*) in the soil by the Chodolny method. *J. Agric. Res.* 49, 1934 (1109-1113).
- 633.51-2.4-1.432.2—King, C. J. ; Eaton, E. D.** Influence of soil moisture on longevity of cotton root-rot *Sclerotia*. *J. Agric. Res.* 49, 1934 (793-798). E.S.R. 72 (795).

## FERTILIZERS AND GENERAL AGRONOMY

- 633.51-2.4-1.433.2 Rao, I. M.; Wad, Y. D.** Studies in disease resistance. II. Leaf roll and red leaf of American cottons. *Proc. Indian Acad. Sci.* 313, 1936 (535-551).
- 633.51-2.4-1.51 Ratcliffe, G. T.** Cotton root-rot as affected by crop rotation and tillage at San Antonio, Tex. *U.S.D.A. Tech. Bull.* 436, 1934, pp. 31.
- 633.51-2.4-1.582 Rogers, C. H.** The effect of three- and four-year rotations on cotton root-rot in the central Texas blacklands. *J. Amer. Soc. Agron.* 29, 1937 (668-680).
- 633.51-2.4-1.81—Jordan, H. V.; Dawson, P. R. et al.** The relation of fertilizers to the control of cotton root rot in Texas. *U.S.D.A. Tech. Bull.* 426, 1934, pp. 75.
- 633.51-2.4-1.83—Young, V. A.; Ware, J. O.; Pope, O. A.** Control of potash hunger and fusarium wilt in cotton. *Phytopath.* 25, 1935 (969). C.A. 30 (5711).
- 633.51-2.4-1.83 Miles, L. E.** Effect of potash fertilizers on cotton wilt. *Miss. Agric. Expt. Sta. Tech. Bull.* 23, 1936, pp. 21. E.S.R. 77 (499).
- 633.51-2.4-1.841 Neal, D. C.** Further studies of the effect of ammonia nitrogen on the growth of the cotton root-rot fungus, *Phytophthora omnivora*, in field and laboratory experiments. *Proc. Assoc. S. Agric. Workers*, 34th, 35th, 36th Ann. Conv. 1933-35 (587-588). C.A. 30 (2690).
- 633.51-2.4-1.841 Neal, D. C.; Collins, E. R.** Concentration of ammonia necessary in a low-lime phase of Houston clay soil to kill cotton root-rot fungus (*Phytophthora omnivora*). *Phytopath.* 26, 1936 (1030-1032). B.C.A. 56 (1105).
- 633.51-2.7-1.415.1 Saeger, H. de.** Importance of soil reaction for cotton cultivation and of the use of ashes. *Bull. Agric. Congo Belge* 27, 1936 (593-605). F.
- 633.52: 546.711 Dzhemkina, A.** Stimulation as a means of increasing flax yields. *Len i Konoplia* 5, 1934 (25-27). B.C.A. 56 (377). *Bred. Zh.* 6 (252). R.
- 633.52-1.411.4-1.81 Romashchenkov, D. D.** Cultivation of flax on bog soils in the extreme north of Karelia. *Bull. Appl. Bot. Leningrad* 15, 1936 (59-78). R.
- 633.52-1.427.3 Sabinin, D. A.; Baslavskaja, S. S.; Dobriakova, N. I. et al.** Diagnosing the mineral nutrition of flax by physiological symptoms. *Trudy Nauch. Inst. Udob.* No. 130, 1936 (7-20). C.A. 31 (5092).
- 633.52-1.432.2 Nowakowski, A.** The reaction of Wolozynski and Petkuser varieties of flax to soil moisture. *Rocz. Nauk Roln.* 43, 1937 (90-127). Flg.
- 633.52-1.515 Ostashev, I. G.** Compacting the soil for flax. *Khim. Sotsial. Zemled.* No. 3, 1937 (99-111). R.
- 633.52-1.531.2 Menzel, K. C.** The closeness of sowing flax on different soils. *Faserforsch.* 12, 1936 (102-105). G.
- 633.52-1.544.7 Vilinsky, D. A.** Mulching of flax with peat. *Len i Konoplia* 7, 1936 (28-31). *ForschDienst.* 2 (16). R.
- 633.52-1.81 Robinson, B. B.** Some physiological factors influencing the production of flax-fiber cells. *J. Amer. Soc. Agron.* 25, 1933 (312-328). C.A. 28 (3167).
- 633.52-1.81—Alten, F.; Goeze, G.** The influence of manuring on the yield and quality of flax fibre. *Ernähr. Pflanze* 32, 1936 (1-14). [G.e.]



# BIBLIOGRAPHY OF SOIL SCIENCE

- 633.52-1.81—Menzel, K. C.** Soil and fertilizers in their effects on flax fibre. *Faserforsch.* 12, 1936 (122-134). [G.]
- 633.52-1.81—Opitz, K.** Nutrition and manuring of flax. *ForschDienst.* 1, 1936 (848-855). [G.]
- 633.52-1.81—Opitz, K.** Nutrition and manuring of flax. *Ernähr. Pflanze* 32, 1936 (308). [G.]
- 633.52-1.81—Peive, Ya. V.** Manuring in rotation with flax. *Len i Konoplja* 13, 1936 (9-13). *ForschDienst* 2 (52).
- 633.52-1.81—Brioux, C.; Jouis, E.** Studies on flax culture in the Lower Seine. *Ann. Agron.* 7 (n.s.), 1937 (190-206). [F.]
- 633.52-1.81: 581.192—Schmalfuss, K.; Micheel, H.** The dependence of the quality of linseed oil on the mineral nutrition of plants. *Angew. Bot.* 17, 1935 (199-206). C.A. 29 (6690).
- 633.52-1.81: 581.192—Schmalfuss, K.** Experimental studies on the physiology and nutrition of flax in relation to the formation of fibre and oil. *Bodenk. Pflernahr.* 1, 1936 (1-39). [G.]
- 633.52-1.81: 581.192—Giesecke, F.; Schmalfuss, K.; Gerdum, E.** Experimental studies on the physiology and nutrition of flax with regard to the formation of fibre and oil. *Bodenk. Pflernahr.* 4, 1937 (340-357). [G.]
- 633.52-1.81: 581.192—Schmalfuss, K.** Further studies on fat formation in flax seeds under the influence of the surrounding conditions and nutrition of the plants. *Bodenk. Pflernahr.* 5, 1937 (37-48). [G.]
- 633.52-1.811—Brioux, C.; Jouis, E.** Cultivation of flax in the Lower Seine district. Absorption curves of fertilizers. *Ann. Agron.* 6 (n.s.), 1936 (396-408). [F.]
- 633.52-1.811—Noskova, A. V.** Critical periods in the NPK nutrition of flax. *Khim. Sotsial. Zemled.* No. 5, 1936 (27-40). [R.]
- 633.52-1.811—Sabinin, D. A.; Baslavskaja, S. S. et al.** Diagnosis of the mineral nutrient requirements of flax by physiological indications. *Trudy Nauch. Inst. Udobr.* No. 130, 1936 (7-20). [R.]
- 633.52-1.816.2—Kriukov, V.** The fertilizing of technical crops. *Khim. Sotsial. Zemled.* 4, 1933 (7). *Zh. D.* 40 (125). [R.]
- 633.52-1.816.2—Evseev, I. D.** Critical periods in the mineral nutrition of cultivated plants. *Bull. Acad. Sci. U.S.S.R.*, 1935 (41-60). B.C.A. 54 (821).
- 633.52-1.816.2—Saraev, P.** Time of application and placement of mineral fertilizers for flax. *Khim. Sotsial. Zemled.* No. 4, 1936 (39-45).
- 633.52-1.821.1—Evseev, I. D.** The time for the application of lime in a flax rotation. *Khim. Sotsial. Zemled.* No. 3, 1937 (31-33). [R.]
- 633.52-1.83—Filipenia, V. M.** Potassium fertilizers for flax and hemp. *Kali* No. 4, 1935 (50-52). C.A. 30 (1168).
- 633.52-1.83—Filipenia, V. M.** Potash manuring for flax and hemp. *Len i Konoplja* 13, 1936 (14-17). *ForschDienst.* 2 (52). [R.]
- 633.52-1.85—Fomin, K.** The comparative effect of phosphorite and superphosphate on the yield of hemp on chernozem soils. *Len i Konoplja* 4, 1934 (18-20). *Bied. Zbl.* 6 (259). [R.]
- 633.52-1.85—Hutton, J. G.; Strickland, G.** Flax investigations. *S. Dak. Agric. Expt. Sta. Ann. Rept.* 1934 (20). C.A. 30 (1499).

## FERTILIZERS AND GENERAL AGRONOMY

- 633.52-1.874—Kudriavtsev, V. A.** Green manuring of flax on podzol soils. *Khim. Sotsial. Zemled.* No. 5, 1936 (17-26). [R.]
- 633.52-2.191—Scholz, W.** The chlorosis of flax and its relation to iron and manganese. *Ztschr. Pflanz. Düng.* 34A, 1934 (296-312). [G.]
- 633.52-2.191-1.821.1—Scholz, W.** Further experiments on the sensitivity of flax to lime. *Bodenk. Pflernähr.* 2, 1937 (230-245). [G.]
- 633.52-2.4-1.81 Diddens, H. A.** Investigation on flax smut caused by *Pythium Megalacanthum* de Bary. *Thesis, Amsterdam Univ.* 1931. Z.P.D. 43 (234). [Du.]
- 633.522-1.411.4-1.81 Romashchenkov, D. D.** Hemp on bog soils in the north of Karelia. *Bull. Appl. Bot. Leningrad* 15, 1936 (79-91). [R.e.]
- 633.522-1.415.1—Baslavskaja, S. S.** The behaviour of hemp towards soil reaction. *Trudy Nauch. Inst. Udob.* No. 130, 1936 (34-38). [R.g.]
- 633.522-1.416 Tobler, F.** The influence of soil conditions on the development of hemp in Turkey. *Ernähr. Pflanze* 33, 1937 (244-248). [G.]
- 633.522-1.51 Lobovikov, N.** The cultivation of soil for hemp. *Trudy Konoplia* 8 9, 1933 (13). Z.P.D. 37 (239). [R.]
- 633.522-1.67 Rabinovich, I. E.; Samoilov, A. E.** The effect of irrigation on the development and yield of hemp. *Trudy Inst. Nauch. Udob.* No. 1, 1931 (214-232). E.S.R. 72 (177).
- 633.522-1.81—Scheel, R.** The influence of manuring on the yield and fibre formation of hemp. *Ernähr. Pflanze* 32, 1936 (322-327). [G.e.]
- 633.522-1.811 Dobrunov, L. G.** Competitive powers of hemp, flax and oats grown simultaneously on soils of different fertility. *Ztschr. Pflanz. Düng.* 13B, 1934 (510-515). [G.]
- 633.522-1.811 Dobrunov, L. G.** Characteristics of the growth and mineral nutrition of hemp with simultaneously maturing male and female plants. *C. R. Acad. Sci. (U.S.S.R.)* 14, 1937 (521-524). [R.]
- 633.522-1.811.1—Kozlikhin, A. D.** N nutrition of hemp. *Trudy Beloruss. S. Kh. Inst.* 5, 1936 (71-86). [R.g.]
- 633.522-1.86 Kabanov, B.** Hemp after manuring with "Torlakalen". *Melior. Torf* 5, 1931 (53). *Byd. Zh.* 64 (84). [R.]
- 633.524.1-1.5—Paul, W. R. C.; Chelvanayagam, A. V.** Sunhemp in the Jaffna peninsula. *Trop. Agricult.* 86, 1936 (23-27).
- 633.524.1-2.4-1.436 Uppal, B. N.; Kulkarni, N. T.** Studies in fusarium wilt of sunhemp. I. The physiology and biology of *Fusarium vasinletum* Atk. *Indian J. Agric. Sci.* 7, 1937 (413-442). [R.]
- 633.524.3-1.432.2 Zemsky, P.; Baliabo, N.** Relation of kenaf to the water and salt regime of the soil. *Novoe Volokno* No. 5, 1934 (23-30). [R.]
- 633.524.3-1.81—Staroselsky, I. Yu.** The effect of manuring kenaf on different climatic soil types. *Novoe Volokno* No. 5, 1934 (31-36). [R.]
- 633.524.3-1.893 Kandaurova, V. F.; Batselashvili, N. B.** Experiments with compound fertilizers for kenaf and tomatoes. *Trudy Nauch. Inst. Udob.* 126, 1935 (43-49). [R.g.]

## BIBLIOGRAPHY OF SOIL SCIENCE

**633.525.1-1.4—East African Agricultural Journal.** Ramie, rhea-fibre or China grass (*Boehmeria nivea*). *E. Afric. Agric. J.* 2, 1936 (74-76).

**633.525.1-1.5—Wassermann, J.** Cultivation of ramie in Transcaucasia. *Int. Rev. Agric.* 25, 1934 (390-393).

**633.525.1-1.81 Chkhikvishvili, V.** Ramie manuring in the Alazan valley. *Soviet. Subtrop.* No. 10, 1936 (30-35). [R.e.]

**633.525.1-1.81 Isakova, A.; Chkonja, T.** The influence of Cl and SO<sub>4</sub> anions on the development, physiological functions and fibre quality of white ramie, *Boehmeria nivea*. *Bull. Acad. Sci. (U.S.S.R.) (Cl. Sci. Math.) Biol. Ser.* No. 1, 1936 (131-142). [R.e.]

**633.526.23-1.5 Lock, G. W.** The cultivation of sisal. *E. Afric. Agric. J.* 1, 1935 (73-75).

**633.526.23-1.5 Renodier, L.** Sisal and its future improvement in the French Sudan. *Bull. Inst. Colon. Havre* 9, No. 88, 1937 (15-19). [F.]

**633.526.23-1.874 Doop, J. E. A.** The influence of green manuring and commercial fertilizers alone or together on the growth of sisal. *Bergcultures* 10, 1936 (1306-1327). *Ernähr. Pflanze* 33 (179).

**633.526.23-1.874 Doop, J. E. A.** Green manuring, artificial manure and other factors in sisal and cassava production. *Bergcultures* 11, 9, 1937 (264-278). [Du.]

**633.526.23-2.19-1.4 Schmid, K.** Investigations of the soils and plants of diseased sisal stock in East Africa. *Phosphorsäure* 4, 1934 (676-685). C.A. 29 (1194). G.

**633.526.23-2.19-1.811.3 Doop, J. E. A.** Potassium deficiency of sisal and manioc (cassava). *Bergcultures* 9, 1935 (1293-1298). 10, 1936 (42-51). [Du.] *Ernähr. Pflanze* 33, 1937 (109-110). G.

**633.527.3-1.415.1 Yamamoto, K.** Influence of aluminum sulfate on *Cyperus malacensis*. *J. Sci. Soil Japan* 9, 1935 (365-376). C.A. 30 (1498).

**633.584.3-1.5 Hutchinson, H. P.** The cultivation of the cricket bat willow *Salix Caerulea* on sewage farms. *Long Ashton Ann. Rept.* 1935 (217-219).

**633.584.3-1.5 Forestry Commission.** The cultivation of the cricket bat willow. *Forestry Comm. Bull.* 17, 1936, pp. 55. J.H.B. (19232).

**633.584.3-1.81 Ulbricht, H.** The anatomy of basket willow and the influence of different nutrients. *Faserforsch.* 12, 1936 (63-101). G.

## 633.6 SUGAR AND STARCH PLANTS

**633.61 : 551.58—Das, U. K.** A pot experiment with cane grown in the same soil but under different climatic conditions. *Hawan. Plant Rec.* 39, 1935 (26-29).

**633.61 : 551.58 Borden, R. J.** Cane growth studies. The dominating effect of climate. *Hawan. Plant. Rec.* 40, 1936 (143-156).

**633.61 : 581.144.2—Evans, H.** The root-system of the sugar-cane. I. Methods of study. *Emp. J. Expt. Agric.* 3, 1935 (351-362).

## FERTILIZERS AND GENERAL AGRONOMY

**633.61 : 581.144.2—Stevenson, G. C. ; McIntosh, A. E. S.** Investigations into the root development of the sugar-cane in Barbados. (I). Root development in several varieties under one environment. *B.W.I. Cent. Sug. Cane Br. Sta. Bull.* 5, 1935, pp. 44.

**633.61 : 581.144.2—Evans, H.** The root-system of the sugar-cane. II. Some typical root-systems. *Emp. J. Expt. Agric.* 4, 1936 (208-220).

**633.61 : 581.144.2—Evans, H.** The root-system of the sugar-cane. III. The early development of the root-system of sugar-cane in Mauritius. *Emp. J. Expt. Agric.* 4, 1936 (325-331).

**633.61 : 581.144.2—Stevenson, G. C.** Investigations into the root development of the sugar cane in Barbados. II. Further observations on root development in several varieties under one environment. *B.W.I. Cent. Sug. Cane Br. Sta. Bull.* 11, 1936, pp. 43.

**633.61 : 581.144.2—Evans, H.** Further investigations on the root-system of sugar-cane. *Mauritius Dept. Agric. Sug. Res. Sta. Bull.* 12, 1937, pp. 34.

**633.61 : 581.144.2—Evans, H.** A preliminary study of root characters as affecting drought resistance in two sugar-cane varieties and in their seedlings. *Mauritius Dept. Agric. Sug. Res. Sta. Bull.* 14, 1937, pp. 20.

**633.61 : 581.144.2—Evans, H.** The root system of sugar-cane. IV. Absorption and exudation of water and mineral substances. *Emp. J. Expt. Agric.* 5, 1937 (112-124).

**633.61 : 581.144.2—International Sugar Journal.** The root-system of the sugar-cane and its development. *Int. Sug. J.* 39, 1937 (376-378).

**633.61 : 581.144.2—Stevenson, G. C.** Root-development of the sugar-cane in Barbados. *Emp. J. Expt. Agric.* 5, 1937 (239-247).

**633.61 : 581.192—Ayres, A.** Factors influencing the mineral composition of sugar-cane. *Hawaii Sug. Tech. Assoc. Repts. Fifteenth Ann. Meet.* 1936 (29-41).

**633.61-1.4—Beater, B. E.** Soil analysis as an index to fertility. *S. African Sug. J.* 19, 1935 (151, 153, 155, 157). C.A. 29 (4866).

**633.61-1.4—Schreiner, O. ; Deemer, R. B.** Publications relating to sugar-cane soils. *Proc. Int. Soc. Sug. Cane Tech.* 5, 1935 (609-616). C.A. 30 (3568).

**633.61-1.415.3—Bonazzi, A. ; Alvarino, J.** Studies on Cuban soils. VI. Sugar-cane growing in soils of metamorphic origin. VII. Effect of soils on sugar solutions. VIII. Effects of salinity. *Proc. Cuban Sug. Tech. Assoc.* 10, 1936 (164-183). C.A. 31 (6789).

**633.61-1.416—Sundar Rao, A. L.** Studies in the physical and chemical properties of some sugar-cane soils. *Proc. Indian Acad. Sci.* 6, 1937 (91-97).

**633.61-1.416.1—Richardson, G. G.** A preliminary study of the relationship of nitrogen to cane yield and juice quality at Waialea Mill Company. *Hawaii Sug. Tech. Assoc. Repts. Fifteenth Ann. Meet.* 1936 (61-67).

**633.61-1.416.2—Hardy, F.** Phosphate status of sugar-cane soils. *Proc. Sug.-Cane Investg. Cilec. Trin.* 4, 1932 (23-4 ; 38-9 ; 63-5 ; 90 ; 124-5). C.A. 29 (1919).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 633.61-1.416.2-1.416.4—Borden, R. J. Diagnosing the status of available phosphoric acid and potash in sugar-cane soils. *Hawaii. Plant. Rec.* 40, 1936 (3-10).
- 633.61-1.416.2-1.416.4—Borden, R. J. Some interesting canetonnage, purity, soil-analyses, juice-analyses relationships. *Hawaii. Plant. Rec.* 40, 1936 (11-19).
- 633.61-1.416.4—Turner, P. E. Potash in molasses. *Proc. Sug.-Cane Invest. Cttee. Trin.* 4, 1933 (239). C.A. 29 (1920).
- 633.61-1.416.4-1.841.1—Turner, P. E. Effect of heavy dressings of ammonium sulphate on yield of cane and available potash in soil. *Proc. Sug.-Cane Invest. Cttee. Trin.* 4, 1932 (142). C.A. 29 (1923).
- 633.61-1.416.871.1—Turner, P. E. Manganese in relation to juice purity. *Proc. Sug.-Cane Invest. Cttee. Trin.* 4, 1933 (247-248). C.A. 29 (1920).
- 633.61-1.416.871.1—Martin, J. P. Studies on growth of sugar-cane in nutrient solutions. *Hawaii. Plant. Rec.* 39, 1935 (79-96).
- 633.61-1.417—Batham, H. N.; Nigam, L. S. Effect of soil organic matter and nitrogen on the ripening of sugar-cane. *Agric. Live-Stk. India* 6, 1936 (169-172).
- 633.61-1.421—Evans, H. Some preliminary data concerning the best shape and size of a plot for field experiments with sugar-cane. *Mauritius Sugar-cane Res. Sta. Bull.* 3, 1934, pp. 11.
- 633.61-1.421—Lennox, C. G.; Mangelsdorf, A. J. Plot technique in the testing of sugar-cane varieties. *Abs. Pap. 5th Cong. Int. Soc. Sug.-Cane Tech. Agric. Sect. Australia* 1935. *Hawaii. Plant. Rec.* 39, 1935 (291).
- 633.61-1.421—Sayer, W.; Iyer, P. V. Krishna. On some of the factors that influence the error of field experiments with special reference to sugar-cane. *Indian J. Agric. Sci.* 6, 1936 (917-929).
- 633.61-1.421—Sayer, W.; Valoyanathan, M.; Iyer, S. S. Ideal size and shape of sugar-cane experimental plots based upon tonnage experiments with Co. 205 and Co. 213 conducted in Pusa. *Indian J. Agric. Sci.* 6, 1936 (684-714).
- 633.61-1.423—Craig, N. Laboratory methods of soil fertility determinations in Mauritius. *Abs. Pap. 5th Cong. Int. Soc. Sug.-Cane Tech. Agric. Sect. Australia* 1935. *Hawaii. Plant. Rec.* 39, 1935 (288).
- 633.61-1.423—Kerr, H. W.; Stieglitz, C. R. v. Laboratory methods of soil fertility determination in Queensland. *Abs. Pap. 5th Cong. Int. Soc. Sug.-Cane Tech. Agric. Sect. Australia* 1935. *Hawaii. Plant. Rec.* 39, 1935 (289).
- 633.61-1.423—O'Neal, A. M.; Hurst, L. A. Methods used to determine the fertilizer requirements of sugar-cane in Louisiana. *Abs. Pap. 5th Cong. Int. Soc. Sug.-Cane Tech. Agric. Sect. Australia* 1935. *Hawaii. Plant. Rec.* 39, 1935 (289).
- 633.61-1.423—Saint, S. J. Laboratory methods of soil fertility determination in Barbados. *Abs. Pap. 5th Cong. Int. Soc. Sug.-Cane Tech. Agric. Sect. Australia* 1935. *Hawaii. Plant. Rec.* 39, 1935 (289).
- 633.61-1.423—Taylor, H. J. W. A procedure for sampling cane juice and soil as used at Pioneer Mill Company, Ltd. *Hawaii. Plant. Rec.* 39, 1935 (109-112).

# FERTILIZERS AND GENERAL AGRONOMY

- 633.61-1.432.2**—Khanna, K. L. Sugar-cane research in Bihar and Orissa. *Bihar and Orissa Dept. Agric. Bull.* 5, 1933, pp. 31. F.a.S. 30 (31).
- 633.61-1.432.2** Cook, R. M. Relationship between soil moisture and crop growth. *Proc. Queensland Soc. Sug.-Cane Tech.* 6, 1935 (65-72). B.C.A. 53 (386).
- 633.61-1.432.2**—Javier, B. P. Effects upon young sugar-cane plants of varying the moisture content of clay loam soils in pots. *Philipp. Agrist.* 25, 1936 (266-283).
- 633.61-1.432.3**—Alicante, M. M. Percolation rate of water through soils and its relation to cane growth. *Philipp. Sug. Assoc. Ann. Rept. Dir. Res.* 1932 (197-211). C.A. 29 (269).
- 633.61-1.453; 546.19**—Cane Growers Quarterly Bulletin. Absorption of arsenic by the crop. *Cane Grow. Quart. Bull.* 1, 1933 (41). B.C.A. 53 (1075).
- 633.61-1.454**—Mangelsdorf, A. J. Growth-failure problems. *Hawaii. Plant. Rec.* 39, 1935 (222-229).
- 633.61-1.459**—Townsend, A. Soil erosion—a problem confronting the sugar farmer. *Proc. Eleventh Ann. Cong. S. Afric. Sug. Tech. Assoc.* 1937 (139-141).
- 633.61-1.5** Booberg, G. Influence of wet and dry planting. *Arch. Suikerindust.* 42, 1934 (735-749). F.a.S. 30 (146).
- 633.61-1.5** Edmonds, A. G. The planting of sugar-cane. *Madras Dept. Agric. Bull.* 38, 1935, pp. 18. *Bull. Imp. Inst.* 33 (394).
- 633.61-1.5** Turner, P. E.; Kelsick, R. E. Recent investigations on sugar-cane and sugar-cane soils in St. Kitts. II. Experiments with varieties, with time of planting, and with distance of spacing, reaped in 1936. *Trop. Agric. Trin.* 13, 1936 (257-265).
- 633.61-1.5**—Rosenfeld, A. H. The spacing of sugar-cane rows. *Trop. Agric. Trin.* 14, 1937 (235-241).
- 633.61-1.547.1-1.81**—Turner, P. E. Effect of manurial treatment on germination of sugar-cane under field conditions. *Proc. Sug.-Cane Investig. Ctee. Trin.* 6, 1934 (404-416). J.H.B. 4 (209).
- 633.61-1.581**—Williams, C. H. B.; Follett-Smith, R. R.; Cameron, C. Field experiments with sugar-cane. IV. *Brit. Guiana Dept. Agric. Sug. Bull.* 4, 1935, pp. 121.
- 633.61-1.581**—Follett-Smith, R. R.; Robinson, I. A. Flood-fallowing. *Agric. J. Brit. Guiana* 7, 1936 (227-230).
- 633.61-1.67** Lyman, H. Developments in long line irrigation. *Proc. Hawaii. Sug. Tech. Assoc.* 13, 1934 (69-82). F.a.S. 29 (450).
- 633.61-1.67** Shaw, H. R.; Swezey, J. A. Notes on the Waialea irrigation investigations. *Hawaii. Plant. Rec.* 39, 1935 (68-78).
- 633.61-1.67**—Khanna, K. L. A simple auto-irrigation device for use in water requirement studies of sugar-cane. *Agric. Live-Stk. India* 7, 1937 (18-23).
- 633.61-1.67**—Tapiolas, B. A modified irrigation method. *Cane Grow. Quart. Bull.* 4, 1937 (140-142).
- 633.61-1.67-1.81**—Williams, C. H. B.; Follett-Smith, R. R.; Cameron, C. Field experiments with sugar cane. VI. *Brit. Guiana Dept. Agric. Sug. Bull.* 6, 1937, pp. 122.

# BIBLIOGRAPHY OF SOIL SCIENCE

- 633.61-1.81—Craig, M. Results of manurial experiments harvested in 1931 and 1932. *Mauritius Sug.-Cane Res. Sta. Bull.* 1 (revised), 1933 (1-12).
- 633.61-1.81—Demandt, E. Summary of the results of the plot tests on various [sugar-cane] problems in 1932. *Arch. Zuckerind. Deut. III*, 1933 (209-231). C.A. 27 (3024).
- 633.61-1.81—Saint, S. J. Manurial trials with sugar-cane. *Barbados Agric. J.* 2, 1933 (1-32).
- 633.61-1.81—Gordon, A. An interpretation of results of fertilizer tests on sugar-cane. *Sug. News* 15, 1934 (147-153).
- 633.61-1.81—King, R. H. Cane fertilization in China. *Sug. News* 15, 1934 (650-653). E.A.S. 30 (69).
- 633.61-1.81—Judd, D. S.; Borden, R. J. Plantation fertilizer practices. *Hawaii. Plant. Rec.* 39, 1935 (30-60).
- 633.61-1.81—Lander, P. E.; Narain, R. Sugar-cane in the Punjab. Part I. *Indian J. Agric. Sci.* 5, 1935 (213-345). J.I.B. 4 (312).
- 633.61-1.81—O'Neal, A. M.; Schreiner, O.; Hurst, L. A. Fertilizer studies on two important soil types in Louisiana. *Abstr. Pap. 5th Cong. Int. Soc. Sug.-Cane Tech. Agric. Sect. Australia* 1935. *Hawaii. Plant. Rec.* 39, 1935 (290).
- 633.61-1.81—Saint, S. J. Manurial trials with sugar-cane. *Barbados Agric. J.* 4, 1935 (129-164).
- 633.61-1.81—Turner, P. E. Effect of manurial treatment on growth of sugar-cane. I. Early tiller formation of plant canes in relation to manurial treatment. The variety B.H. 10 (12). *Trop. Agric. Trin.* 12, 1935 (179-186).
- 633.61-1.81—Turner, P. E. Recent investigations on sugar-cane and sugar-cane soils with nitrogen, phosphate and potash, and with pen manure, in relation to yield of cane. *Trop. Agric. Trin.* 12, 1935 (320-332).
- 633.61-1.81—Colepepper, J. E. The financial aspect of some experiments harvested during 1934 and 1935. *Proc. Tenth Ann. Cong. S. Afric. Sug. Tech. Assoc.* 1936 (169-179).
- 633.61-1.81—Lintner, J. Results of a fertilizer experiment on sugar-cane. *Proc. Tenth Ann. Cong. S. Afric. Sug. Tech. Assoc.* 1936 (156-168).
- 633.61-1.81—Srivastava, R. C. A survey of technical and agricultural work on sugar-cane abroad. *Agric. Lvs.-Stk. India* 6, 1936 (632-645).
- 633.61-1.81—Turner, P. E. Field experiments on sugar-cane in Trinidad. *Trinidad Sug.-Cane Invest. Offic. Ann. Rept.* 1936, pp. 67.
- 633.61-1.81—Turner, P. E.; Kelsick, R. E.; Gregory, G. B. Recent investigations on sugar-cane and sugar-cane soils in St. Kitts. I. Preliminary results of the new experimental scheme. *Trop. Agric. Trin.* 13, 1936 (91-97).
- 633.61-1.81—Williams, C. H. B.; Follett-Smith, R. R.; Cameron, C. Field experiments with sugar-cane. V. *Sug. Bull.* 5, 1936, pp. 128.
- 633.61-1.81—Cliff, A. P. Further work on the manuring of sugar-cane in North Bihar. *Agric. Lvs.-Stk. India*, 7, 1937 (619-624).
- 633.61-1.81—Craig, N. A brief study of the yield factors involved in a manurial trial. *Trop. Agric. Trin.* 14, 1937 (31-33).

# FERTILIZERS AND GENERAL AGRONOMY

- 633.61-1.81—International Sugar Journal.** Fertilizer experiments in Hawaii. *Int. Sug. J.* 39, 1937 (336-337).
- 633.61-1.81—Kerr, H. W.** Review of results from fertility trials in North Queensland. *Cane Grow. Quart. Bull.* 4, 1937 (128-133).
- 633.61-1.81—Lintner, J.** Some fertilizer trials on sugar-cane. *Proc. Eleventh Ann. Cong. S. Afric. Sug. Tech. Assoc.* 1937 (142-158).
- 633.61-1.81 Saint, S. J.** Manurial trials with sugar-cane. *Barbados Agric. J.* 6, 1937 (20-41).
- 633.61-1.81—Turner, P. E.; Kelsick, R. E.** Recent investigations on sugar-cane and sugar-cane soils in St. Kitts. IV. Cultural, mulching, and manurial experiments reaped in 1936. *Trop. Agric. Trin.* 14, 1937 (97-108).
- 633.61-1.81—Turner, P. E.; Warneford, F. H. S.; Charter, C. F.** Recent investigations on sugar-cane and sugar-cane soils in Antigua. II. Manurial experiments reaped in 1936. *Trop. Agric. Trin.* 14, 1937 (150-155).
- 633.61-1.81—Turner, P. E.; Warneford, F. H. S.; Charter, C. F.** Recent investigations on sugar-cane and sugar-cane soils in Antigua. II. Manurial experiments reaped in 1936 (contd.). *Trop. Agric. Trin.* 14, 1937 (179-188).
- 633.61-1.81: 581.192—Hardy, F.** Cane ecology. *Proc. Sug. cane Invest. Offic. Trin.* 4, 1934 (352-353). B.C.A. 56 (479).
- 633.61-1.81: 581.192 Beater, B. E.** Some phases of soil investigation relating to work at the experiment station. *Proc. Eleventh Ann. Cong. S. Afric. Sug. Tech. Assoc.* 1936 (127-130).
- 633.61-1.811 Beauchamp, C. E.; Lazo, F.; Bonazzi, A.** Sugar cane physiology. V. Contents of nitrogen, phosphorus and potassium in crude chlorophyll and in the leaf skeleton and their relationships with fertilizers. *Proc. Cuban Sug. Tech. Assoc.* 8, 1934 (82-114). C.A. 30 (1930).
- 633.61-1.811—Williams, J. F.** The chemist and economy in the production of sugar. *Agric. J. Brit. Guiana* 5, 1934 (268-273). C.A. 29 (2647).
- 633.61-1.811—Beauchamp, C. E.; Lazo, F.; Bonazzi, A.** Sugar-cane studies: VI. Contents of nitrogen, phosphorus and potash in fertilizers in relation to composition of the chlorophyll of the leaves and growth of the cane. *Proc. Cuban Sug. Tech. Assoc.* 9, 1935 (26-27). F.A.S. 32 (363).
- 633.61-1.811—Saint, S. J.** Juice analyses in relation to the fertilizer requirements of Barbados soils. *Barbados Agric. J.* 4, 1935 (173-181).
- 633.61-1.811 Ayres, A.** Effect of age upon the absorption of mineral nutrients by sugar-cane under field conditions. *J. Amer. Soc. Agron.* 28, 1936 (871-886).
- 633.61-1.811—Rosenfeld, A. H.** Manurial requirements of sugar-cane in Egypt. II. The Kom-Ombo phosphate experiments. *Egypt Min. Agric. Tech. Sci. Serv. Bull.* 173, 1936, pp. 20.
- 633.61-1.811: 535.21—Borden, R. J.** Cane growth studies. The effect of sunlight on the utilization of nitrogen and potash by H 109 cane. *Hawai. Plant. Rec.* 41, 1937 (3-5).
- 633.61-1.811,1—Rosenfeld, A. R.** Manurial requirements of sugar-cane in Egypt. I. Optimum rate of nitrogen experiments. *Egypt Min. Agric. Bull.* 169, 1937, pp. 22.



# BIBLIOGRAPHY OF SOIL SCIENCE

**633.61-1.811.91—Gordon, A.** The duty of rainfall for sugar-cane. *Sug. News* 17, 1936 (277-282). E.S.R. 76 (587).

**633.61-1.816.3—Demandt, E.** Summary of the results of manurial experiments for the 1934 harvest. *Arch. Suikerindust. Deel II*, 1934 (925-935). *Bick. Zbl.* 6 (123).

**633.61-1.816.3—Dort, T. K. L. van.** Comparison of deep and shallow fertilization of sugar-cane. *Arch. Suikerindust. Deel II*, 1934 (440-445). *E.S.S.* 30 (31). (Du.)

**633.61-1.821.1—Arancillo, V. B.** The effects of the application of different amounts of lime upon the yields of sugar-cane under Los Baños conditions. *Philipp. Agrist.* 24, 1935 (498-508).

**633.61-1.821.1—Turner, P. E.** Recent investigations on sugar-cane and sugar-cane soils in Trinidad. I. General effects of ground limestone. *Trop. Agric. Trin.* 12, 1935 (262-268).

**633.61-1.821.1—Turner, P. E.** Recent investigations on sugar-cane and sugar-cane soils in Trinidad. II. Interactions of lime with nitrogen, phosphate and potash and with pen manure, in relation to yield of cane. *Trop. Agric. Trin.* 12, 1935 (293-302).

**633.61-1.821.1—Current Science.** The effect of liming on the yield and quality of sugar-cane. *Cur. Sci.* 5, 1936 (177).

**633.61-1.821.1—Turner, P. E.** Recent investigations on sugar-cane and sugar-cane soils in Trinidad. III. Effects of manurial treatment with ground limestone on crop quality and yield of commercial sugar. *Trop. Agric. Trin.* 13, 1936 (299-306, 318-326).

**633.61-1.821.1—Turner, P. E.** Recent investigations on sugar-cane and sugar-cane soils in Trinidad. III. Effects of manurial treatment with ground limestone on crop quality and yield of commercial sugar. *Trop. Agric. Trin.* 14, 1937 (63-69).

**633.61-1.821.1:581.192—Rodríguez, G.** The effects of soil liming on the composition of sugar-cane. *Proc. Sug. Cane Investig. Cilec. Trin.* 4, 1934 (359-394). *C.A.* 30 (556).

**633.61-1.821.1:581.192—Doty, R. E.** The effect of lime applications on juice quality. *Hawaiian Plant. Rec.* 39, 1935 (326-332).

**633.61-1.84—Taggart, W. G.; Gouaux, C. B.** A general summary of experiments with sugar-cane. *La Agric. Expt. Sta. Bull.* 267, 1935 (2-16). *C.A.* 30 (1167).

**633.61-1.84—Saint, S. J.** Manurial trials with sugar-cane. *Barbados Agric. J.* 4, 1935 (1-24).

**633.61-1.84—Das, U. K.** Nitrogen nutrition of sugar-cane. *Plant Physiol.* 11, 1936 (251-317). *B.C.A.* 56 (73).

**633.61-1.84—Das, U. K.; Cornelison, A. H.** The effect of nitrogen on cane yield and juice quality. *Hawaiian Plant. Rec.* 40, 1936 (35-56).

**633.61-1.84—Evans, H.** Some data on the effect of a late heavy dressing of nitrogenous fertilizer on the growth and metabolism of sugar-cane in Mauritius. *Mauritius Sugar-cane Res. Sta. Bull.* 10, 1936, pp. 10.

**633.61-1.84—Pal, H. N.** Manurial treatment for remedying nitrogen deficiency of soils of Upper Assam for growing plant canes. *Proc. Nat. Inst. Sci. India* 3, 1937 (231-232).

**633.61-1.841.1-1.874—Calma, V. C.; Andam, A. V.** A preliminary study of the comparative effects upon the yields of sugar-cane of fertilizing with ammonium sulphate and green manure. *Philipp. Agrist.* 25, 1936 (145-160).

## FERTILIZERS AND GENERAL AGRONOMY

**633.61-1.85—Dodds, H. H.** Notes on some fertilizer experiments. *Proc. Ninth Ann. Cong. S. Afric. Sug. Tech. Assoc.* 1935 (132-139). C.A. 29 (7003).

**633.61-1.85—Vogelsang, W. M. L.** Application of natural phosphates to cane land. *Meded. Cheribon Expt. Sta.* 74, 1935. *Int. Sug. J.* 38 (107).

**633.61-1.85—Blaisemont, L. A. C.** Use of phosphatic fertilizers in the cultivation of sugar-cane and bananas. *Cong. Int. Tech. Chim. Indust. Agric. 5th Cong. Holland* 1, 1937 (290). B.C.A. 56 (956).

**633.61-1.874—Pendleton, R. L.** Grow green manures and reduce fertilizer costs per pupil of sugar. *Sug. News* 16, 1935 (343-348).

**633.61-2.111-1.81 Chopra, J. D.** Effect of artificial manures on sugar-cane. *J. Sci. Tech. India* 1, No. 2, 1935 (35-38). F.A.S. 31 (226).

**633.61-2.19: 546.711—Haddon, E.** Manganese against streak disease of sugar-cane. *Rev. Agric. Maurice* 76, 1934 (140-141). F.A.S. 1930 (32).

**633.61-2.19-1.811.2 Hawaiian Planters Record.** Phosphate deficiency. *Hawaiian Plant. Rec.* 41, 1937 (87).

**633.61-2.4 McMartin, A.** Pathological conditions affecting the growth of the sugar-cane plant from cuttings in Natal. *Proc. Eleventh Ann. Cong. S. Afric. Sug. Tech. Assoc.* 1937 (123-138).

**633.61-2.4-1.84 Carpenter, C. W.** Predisposing factors in Pythium root rot. *Hawaiian Plant. Rec.* 38, 1934 (279-338). C.A. 29 (1570).

**633.61-2.951.23 Wolters, W.** Control of *Anomala orientalis* at the Oahu Sugar Company. *Hawaiian Plant. Rec.* 38, 1934 (264-278). B.C.A. 54 (690).

**633.62-1.453 Dutt, G. P.** Injurious after-effects of jwar. *Allahabad Farmer* 9, 1935 (28-32).

**633.62-1.811.3 Chokkanna, I. N. G.** The rôle of potash in the sugar synthesis of the sorghum saccharatum plant (sweet sorghum). *Ztschr. Pflanz. Dung.* 43, 1936 (43-69). G.

**633.63: 546.27 Belusov, M. A.** The effect of boron on the development of the sugar beet in water cultures. *Trudy Tsentr. Nauch. Inst. Sakh. Prom. (Moscow)* 8, 1932 (50-60). E.S.R. 71 (757). [R.e.]

**633.63: 546.27 Belusov, M. A.** Further experiments on the influence of boron on the growth of sugar beets and other plants. *Trudy Tsentr. Nauch. Inst. Sakh. Prom. (Moscow)* No. 2, 1934 (20-48). C.A. 29 (1585).

**633.63: 546.27 Nowotownna, A.** The influence of boron on the development of soybeans and of sugar beets. *Mém. Inst. Nat. Pol. Econ. Rur. Pulaav* 15, 1934 (19-36). C.A. 30 (7270).

**633.63: 546.27 Ukradyga, F. E.; Onishchenko, I. K.; Oleksluk, A. U.** The effect of boron on the yield and chemical composition of sugar beet. *Nauch. Zap.* 11, 1934 (66-71). [R.e.]

**633.63: 546.27 Scharrer, K.; Schropp, W.** Pot and water culture investigations on the effect of boron in fertilizers alone and in combination with iodine. *Phytopath. Ztschr.* 8, 1935 (525-540). [G.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- 633.63 : 551.577**—**Erdenbrecher, A. H.**; **Dörfeldt, W.** Statistical and analytical results in sugar beet culture. *Deut. Zuckerind.* 59, 1934 (515). Z.P.D. 39 (240).
- 633.63-1.347.24**—**Geiger, C. W.** Overhead irrigation for sugar beets. *Facts ab. Sug.* 30, 1935 (53-54).
- 633.63-1.415.1**—**Manko, S.** The effect of soil reaction on the development of sugar beet (in relation to the buffer action of soils). *Khim. Sotsial. Zemled.* 3, 1934 (26). R.
- 633.63-1.415.1**—**Centralblatt für die Zuckerindustrie.** Soil pH and yield of sugar beets. *Chl. Zuckerind.* 44, 1936 (246-249). B.C.A. 55 (660). G.
- 633.63-1.415.1**—**Roboz-Rosenblüh, E.** Soil reaction and sugar beets. *Cong. Int. Indust. Agric. 4th Cong.* 1935. *Int. Sug. J.* 38, 1936 (395). C.A. 31 (5498).
- 633.63-1.415.1-1.81**—**Decoux, L. et al.** How to improve the culture of the sugar beet. *Inst. Belge Amidour. Better. Pub.* 4, 1937 (3-20). C.A. 31 (4758).
- 633.63-1.416 : 581.192**—**Pázler, J.** The significance of the properties of soil in the composition of sugar beets. *Usty Cukr.* 53, 1935 (375-378). C.A. 29 (7552).
- 633.63-1.418**—**Demidenko, T. T.**; **Martinov, N. P.** Effect of osmotic pressure of soil solution on yield and composition of sugar beet. *C.R. Acad. Sci. (U.S.S.R.)* 15, 1937 (371-374). B.C.A. 56 (1104).
- 633.63-1.432.2**—**Ramin, V.**; **Zippendorf.** The influence of the amount of soil moisture on the growth and form of sugar beet. *Zuckerrubensbau* 17, 1935 (17-20). *Bied. Zbl.* 6 (244). G.
- 633.63-1.432.2 : 581.192**—**Ginneken, P. J. H. van**; **Haan, K. de.** Sugar content, root weight and leaf weight in beets. *Meded. Inst. Suikerbiet* 3, 1933 (131-188). F.a.S. 28 (472).
- 633.63-1.432.2 : 581.192**—**Kirsanov, A. T.**; **Blagoveshchensky, V.**; **Kazakova, M.** The effect of soil moisture on the physiological processes and the chemical composition of sugar beets. *Bull. Moscow Soc. Nat.* 42, No. 2, 1933. *Bied. Zbl.* 6 (218). B.C.A. 55 (709). R.
- 633.63-1.433**—**Chernenkov, A. D.** Soil air and sugar beet yields. *Khim. Sotsial. Zemled.* Nos. 7-8, 1936 (146-159). R.e.
- 633.63-1.434**—**Ehrenberg, P.** Sugar beet and soil structure. *Zuckerrubensbau*, 15, 1933 (87-96, 108-114). *Bied. Zbl.* 65 (211).
- 633.63-1.434**—**Kanivets, I. I.**; **Radchenko, A. G.** The effect of crumbling and of consolidating the soil during pre-sowing cultivation on the physico-biological processes of the soil and the yield of sugar beet. *Sborn. Rab. VNIS* 1936 (515-530). R.
- 633.63-1.434 : 581.192**—**Guilbert, F.** Is there a possible correlation between the sugar content of beets and the compactness of the soil? *Bull. Assoc. Chim. Sucri.* 53, 1936 (574-582). C.A. 30 (5826).
- 633.63-1.445.52**—**Zolotarev, S. N.** Sources of salinization and methods of control under the conditions of the Frunze sugar beet sovkhoz. *Sborn. Rab. VNIS* 1936 (378-388). R.
- 633.63-1.5**—**Larmer, F. G.** Benefits of ridge type planting. *Calif. Sug. Beet Conf., Sacramento*, 1934. F.a.S. 30 (70).
- 633.63-1.5**—**Decoux, L.**; **Vanderwaeren, J.**; **Simon, M.** How to improve the industrial value of the sugar beet. *Inst. Belge Amidour. Better. Pub.* 6, 1935 (412-431). F. du. g. e.

## FERTILIZERS AND GENERAL AGRONOMY

- 633.63-1.5**—**Rayns, F. ; Wright, S. J.** The cultivation and harvesting of sugar-beet on the continent. *Min. Agric. Bull.* 102, 1936, pp. 43.
- 633.63-1.5**—**Paulsen, B. R.** Ridge planting of sugar beets. *Facts ab. Sug.* 32, 1937 (308-309).
- 633.63-1.51**—**Tsvetkov, V.** Cultivation between sugar beet rows. *Khim. Sotsial. Zemled.* No. 6, 1937 (82-91). [R.]
- 633.63-1.512**—**Kanivets, I. I. ; Radchenko, A. G.** Depth of ploughing for sugar beet and the physico-chemical melioration of the soil. *Sborn. Rab. VNIS* 1936 (395-409). [R.]
- 633.63-1.544.7**—**Radugin, B. N.** Whitening and covering between rows as methods for increasing the yield of sugar beets. *Khim. Sotsial. Zemled.* Nos. 11-12, 1935 (175-180). [R.]
- 633.63-1.67**—**Brewbaker, H. E. ; Deming, G. W.** Effect of variations in stand on yield and quality of sugar beets grown under irrigation. *J. Agric. Res.* 50, 1935 (195-210).
- 633.63-1.81**—**Coombe, A.** The fertilizing of sugar beet. *Brit. Sug. Beet Rev.* 7, 1934 (194). Z.P.D. 41 (116).
- 633.63-1.81**—**Hurst, L. A. ; Skuderna, A. W.** Fertilizer studies with sugar beets in the Arkansas Valley area, Colo., 1921-28. *U.S.D.A. Circ.* 319, 1934, pp. 20.
- 633.63-1.81**—**Margolin, K. M.** Fertilizers used for sugar beets in Georgia (and Armenia). *Trudy Tsent. Nauch. Inst. Sakh. Prom.* (Moscow) No. 17, 1934 (142-149). C.A. 29 (8208).
- 633.63-1.81**—**Puzikov, D. N.** Action of composite fertilizers on sugar beet. *Trudy VNIS* No. 18, 1934 (49-81). B.C.A. 56 (377). [R.]
- 633.63-1.81**—**Crowther, E. M.** The manuring of sugar beet. *Brit. Sug. Beet Rev.* 9, 1935 (71-73, 105-106).
- 633.63-1.81**—**Engels, O.** New results and progress in manuring sugar beet. *Zuckerrubenhau* 17, 1935 (21-32). *Bied. Zbl.* 6 (266). [G.]
- 633.63-1.81**—**Engels, O.** Successful sugar beet culture. *Zuckerrubenhau* 17, 1935 (188-193). *Int. Sug. J.* 38 (108). [G.]
- 633.63-1.81**—**Lefort, C. ; Anquez, L.** The effect of unbalanced fertilizers on sugar beet and oats. *Ann. Agron.* 5 (n.s.), 1935 (786-800). [F.]
- 633.63-1.81**—**Marin, A. R.** Experiment on the fertilizing of sugar beet. *Bolet. Inst. Invest. Agron. Madrid* 1, 1935 (213-215). C.A. 30 (6112).
- 633.63-1.81**—**Moore, H. I.** Balanced manuring of sugar beet. Lessons from the Askham Bryan trials. *Brit. Sug. Beet Rev.* 8, 1935 (167-168, 182).
- 633.63-1.81**—**Rayns, F.** Increasing the beet yield. *Brit. Sug. Beet Rev.* 8, 1935 (163-164, 180).
- 633.63-1.81**—**Remy, T.** Sugar beet research during 1934-35, Parts IV-VII. *Zuckerrubenhau* 18, 1936 (58-66).
- 633.63-1.81**—**Sobolev, F. S.** New methods of fertilizing sugar beet. *Khim. Sotsial. Zemled.* No. 2-3, 1936 (44-59). [R.]
- 633.63-1.81**—**Zheleznov, P. A.** Fertilizing sugar beet in the Büsky district, West Siberia. *Khim. Sotsial. Zemled.* No. 2-3, 1936 (64-69). [R.e.]
- 633.63-1.81**—**Haan, K. de.** Nitrogen, potassium and spacing field experiments during 1935 and 1936. *Meded. Inst. Suikerbied.* 7, 1937 (65-78). [Dut.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- 633.63-1.81—Joret, G.; Malterre, H. Agronomic research on the major crops on the Santerre salts. III. Sugar beet. *Ann. Agron.* 7 (n.s.), 1947 (529-546). [F.]
- 633.63-1.81:581.144.2 Vasil'ev, V. F.; Dolzhikova, V. M. The effect of mineral fertilizers on the anatomical structure of the sugar-beet root. *Soviet Bot.* 5, 1935 (129-134). *Herb. Abs.* 7 (267).
- 633.63-1.81:581.192—Denisevsky, V. S. Value of the sugar-beet crop in relation to its technical processing. *Trudy Nauch. Inst. Udob.* No. 113, 1933 (49-55). B.C.A. 53 (598).
- 633.63-1.81:581.192—Avramov, P.; Gudwill, S. The effect of mineral fertilizers on the nitrogen content of different varieties of sugar beet. *Khim. Sotsial. Zemled.* 3, 1934 (39-48). *Ried. Zbl.* 6 (257). [R.]
- 633.63-1.81:581.192—Lavis, C. Enigmatic behaviour of sugar beet soils. *Calif. Sug. Beet Conf. Sacramento* 1934. F.A.S. 30 (70).
- 633.63-1.81:581.192 Spengler, O. Fertilization of beet and soil-phosphate investigations. *Deut. Zuckerindust.* 59, 1934 (941-942). B.C.A. 54 (326). [G.]
- 633.63-1.81:581.192—Buszczynski, B. Influence of a very large amount of fertilizer on the composition of sugar beet. *Bull. Assoc. Chim. Sucr.* 52, 1935 (345-348). [F.]
- 633.63-1.81:581.192 Demidenko, T. T.; Kulkes, A. A.; Popov, V. P. Colloids in beet in relation to liming of the soil. *C.R. Acad. Sci. (U.S.S.R.)* 3 (n.s.), 1936 (175-179). [E.]
- 633.63-1.81:581.192—Rautenberg, E. The effect of manuring on the sugar beet quality. *ForschDienst.* 2, 1936 (353-365). [G.]
- 633.63-1.81:581.192 Dedek, J.; Vasatko, J.; Ivancenko, D. The effect of fertilizers on the behaviour of sugar beet during factory processing. *Inst. Belge Andlor. Better. Pub.* 5, 1937 (163-185). [F.]
- 633.63-1.811—Decoux, L.; Vanderwaeren, J.; Simon, M. An investigation on the fertilizer requirements of a beet soil. *Inst. Belge Andlor. Better. Pub.* 6, 1935 (463-472). *Feduge.*
- 633.63-1.811—Lefort. Action of unbalanced fertilizers on the cultivation of sugar beets. *Rech. Fert. Sta. Agron. Douai* 1934, 1935 (33-36). C.A. 29 (7000).
- 633.63-1.811—British Sugar Beet Review. Progress of sugar beet experiments. *British Sugar Beet Rev.* 10, 1937 (199-200). F.A.S. 32 (243).
- 633.63-1.811:535.21—Krüger, W.; Wimmer, G.; Ringleben, O. Influence of light on development, sugar formation, and nutrient absorption of the sugar beet. *Ztschr. Wirtsch. Zuckerindust.* 86, 1936 (271-288). B.C.A. 55 (1116).
- 633.63-1.811.1—Pultz, L. M. Relation of nitrogen to yield of sugar-beet seed and to accompanying changes in composition of roots. *J. Agric. Res.* 54, 1937 (639-654).
- 633.63-1.811.5—Druzhinin, D. V. Sodium in fertilizers as a means of increasing the yield of sugar beet. *Khim. Sotsial. Zemled.* No. 1, 1935 (53-62). [R.]
- 633.63-1.811.5—Druzhinin, D. V.; Shirshov, A. A. The significance of sodium in fertilizers for increasing the yield of sugar beet. *Khim. Sotsial. Zemled.* Nos. 11-12, 1935 (84-94). [R.g.]

## FERTILIZERS AND GENERAL AGRONOMY

**633.63-1.811.5—Nikishkina, P.** Influence of sodium salts on the crop of sugar beets in the presence of nitrogen derived from various sources. *Miner. Udob.* 1, 1935 (98). C.A. 30 (1498). (R.)

**633.63-1.811.5—Shirshov, A. A.; Lruzhinin, D. V.** The value of sodium for the yield and quality of sugar beet. *Khim. Sotsial. Zemled.* 11, 1936 (21-27). (R.)

**633.63-1.811.5—Ukradyga, F.; Oleksiuk, A.** The effect of K and Na on the growth of sugar beet. *Sborn. Rab. VNI* 1936 (313-320). (R.)

**633.63-1.811.5—Schreven, D. A. van.** An investigation on the importance of sodium for the growth and ion absorption of sugar beets. 1. Experiments with NaCl in water, sand and soil cultures. *Meded. Inst. Suikerbiet.* 7, 1937 (119-226). (Du.)

**633.63-1.811.6—Decoux, L.; Roland, G.** Investigations on Mg and P deficiencies in sugar beet. *Inst. Belge Amélior. Better. Pub.* 5, 1937 (43-72). (Fdu.g.e.)

**633.63-1.811.6—Roland, G.** Magnesium requirements of sugar beet. *Cong. Int. Tech. Chim. Indust. Agric. 5th Cong. Holland* 1, 1937 (457-467). B.C.A. 56 (956).

**633.63-1.811.9—Onishchenko, I. K.** Industrial wastes, a new form of fertilizers for sugar beet. *Nauch. Zap.* 11, 1934 (69-76). (R.)

**633.63-1.811.9—Onishchenko, I. K.; Vlasuk, P. A.** Action of new kinds of fertilizers upon the yield and quality of sugar beets. *Nauch. Zap.* 11, 1934 (157-165). C.A. 29 (4873).

**633.63-1.811.9—Vlasuk, P. A.** Physico-chemical stimulation and new fertilizers in sugar beet husbandry. *Nauch. Zap.* 11, 1934 (53-65). (R.)

**633.63-1.811.9—Vlasuk, P. A.; Onishchenko, I. K.** New fertilizers from residues of chemical metallurgical and ore industries of the Don Basin. *Sborn. Rab. VNI* 1936 (233-295). (R.)

**633.63-1.811.9—Pronin, M. E.; Golle, V. P.** The importance of micro-elements for the yield and quality of sugar beet. *Zuckerindustrie (Rev. Tech. Russ.)* No. 9, *Inst. Belge Amélior. Better. Pub.* 5, 1937 (125-126). (F.)

**633.63-1.816.2—Naidin, P. G.** Autumn application of fertilizers to sugar beet. *Khim. Sotsial. Zemled.* Nos. 11-12, 1935 (33-37). (R.)

**633.63-1.816.2—Kolosha, I. L.; Karachev'ska, L. T.** Influence of fertilizer applications after planting on the yield and quality of sugar beets and potatoes. *Trudi Inst. Agrokim. Khim.* 2, 1936 (4-30). (U.S.S.R.)

**633.63-1.816.3—British Sugar Beet Review.** The application of fertilizers. *Brit. Sug. Beet Rev.* 8, 1934 (81-82).

**633.63-1.816.3—Gubervich, S. M.** The technique of applying concentrated fertilizers to sugar beet. *Miner. Udob.* 3, 1935 (65-71). (R.)

**633.63-1.816.3—Denisevsky, V. S.; Tatun'ko, V. D.** Placement of fertilizers in the soil and the influence of liming and soil structure on the movement of nutrients. *Sborn. Rab. VNI* 1936 (361-371). (G.)

**633.63-1.816.3—Hamacher.** Comparative manurial investigation with sugar beet. *Mitt. Landw.* 51, 1936 (379). (G.)

# BIBLIOGRAPHY OF SOIL SCIENCE

**633.63-1.816.3**—Tatun'ko, V. D. The placement of fertilizers in the soil. *Sborn. Rab. VNIIS* 1936 (352-360). [R.]

**633.63-1.821.1**—Vlasiuk, P. A. The effect of ground limestone and defecation slime on the yield of sugar beet and on the physico-chemical properties of a slightly leached black earth. *Nauk. Zap.* 28, 1933 (39-54). *Biol. Zh.* 5 (504).

**633.63-1.824**—Rozhdestvensky, I.; Levitskaya, A. The rôle of magnesium sulphate, of common salt and of calcium carbonate in increasing the yield and quality of sugar beets. *Khim. Sotsial. Zemled.* 3, 1934 (49-59). *Biol. Zh.* 6 (257). [R.]

**633.63-1.824:581.192**—Boleloucky, F. Magnesium and the formation of carbohydrates in sugar beet. *Ernahr. Pflanze* 32, 1936 (127-129). C.A. 30 (3568). [G.]

**633.63-1.824:581.192**—Gurevich, S. M. The effect of Mg manuring on the yield and quality of sugar beet. *Selkhozniye Polevodstvo* No. 5, 1936 (49-52). *ForschDienst.* 2 (42).

**633.63-1.83**—Nemec, A. Field experiments with graded additions of 40 per cent potash salts in the years 1927-30. *Sborn. Čsl. Akad. Zemled.* No. 102, 1933. C.A. 28 (6908).

**633.63-1.83**—Lut, F. A. The significance of potassium in the system of fertilizing sugar-beet rotations. *Khim. Sotsial. Zemled.* No. 6, 1935 (33-40). C.A. 30 (1167).

**633.63-1.83**—Demidenko, T. T.; Popov, V. P. Accumulation of colloids in sugar beet in relation to the conditions of its development. *Khim. Sotsial. Zemled.* No. 5, 1936 (88-99). [R.]

**633.63-1.835**—Aleksieva, E. The effect of sylvinit on sugar beet. *Khim. Sotsial. Zemled.* 3, 1934 (30-38). *Biol. Zh.* 6 (259). [R.]

**633.63-1.835**—Antykov, A. J. Effect of sylvinit, applied to chernozem, on sugar beet crops. *Kaluzh. No. 2*, 1935 (24-25). B.C.A. 56 (170).

**633.63-1.84**—Costelet, R. de. In which form should nitrogen be applied to beet. *J. Fabric. Sucre* 75, No. 7, 1934. C.A. 29 (1924). Z.P.D. 38 (179). [F.]

**633.63-1.84**—Roboz-Rosenblüh, E. Harmful nitrogen in sugar beet. *Ztschr. Zuckerindust. Czech.* 59, 1934 (110). Z.P.D. 39 (235).

**633.63-1.84**—Lüdecke, H. Influence of stand, nitrogen and cultivation on yield and quality of sugar beet. *Zuckerrübenbau* 17, 1935 (40-48). [S.J.] 37 (233). B.C.A. 54 (690).

**633.63-1.84**—Decoux, L.; Vanderwaeren, J.; Simon, M. Fertilization of beet soils. *Cong. Chim. Indust. 15th Cong. Brussels* 1936 (513-518). C.A. 30 (5708).

**633.63-1.84**—Decoux, L.; Vanderwaeren, J.; Simon, M. Effects of nitrogenous fertilizers on the sugar beet. *Cong. Chim. Indust. 15th Cong. Brussels* 1936 (609-615). C.A. 30 (5708).

**633.63-1.84**—Ramin. Sugar beet and nitrogenous manuring. *Zuckerrübenbau* 18, 1936 (85-88). [G.]

**633.63-1.84**—Sykes, E. T. Experiments on the nitrogenous manuring of sugar beet. *Emp. J. Expt. Agric.* 4, 1936 (152-164).

**633.63-1.84**—Vettel, F. The influence of nitrogenous manuring and various nitrogenous fertilizer materials on the yield and protein content of sugar beet leaves. *Zuckerrübenbau* 18, 1936 (67-72). [G.]

**633.63-1.84**—Haan, K. de. Influence of heavy nitrogenous manuring on sugar beet. *Cong. Int. Tech. Chim. Indust. Agric. 5th Cong. Holland* 1, 1937 (242-245). B.C.A. 56 (958).

## FERTILIZERS AND GENERAL AGRONOMY

- 633.63-1.84 -Keese.** Results of several years experiments on the efficacy and value of different nitrogenous fertilizers for sugar beet. *Zuckerrubensbau* No. 3, March 1937 (35). *Inst. Belge Amélior. Better. Pub.* 5 (235).
- 633.63-1.84 Wimmer, G.; Lüdecke, H.** Can nitrogen manuring of sugar beet be further increased? *Z. Wirts. Zuckerindust.* 87, 1937 (375-406). *B.C.A.* 56 (1104).
- 633.63-1.84 : 581.192 -Burgevin, H.** The influence of nitrogen fertilizers upon the harmful nitrogen content of the sugar beet. *Inst. Belge Amélior. Better. Pub.* 5, 1937 (253-258). [F.d.u.g.e.]
- 633.63-1.84-1.816.2 Shurbitsky, S.** The importance of the time of applying nitrogenous manures to sugar beet with regard to yield and quality. *Trudy Tsent. Nauch. Inst. Sakh. Prom. (Moscow)* 2, 1934 (135). *Z.P.D.* 41 (231). [R.]
- 633.63-1.841-1.816.3 Crane, C. E.** Fertilization of sugar beets. *Amer. Fert.* April 18, 1936 (24-26).
- 633.63-1.841-1.816.3 Vladimirov, A. V.; Kalashnikova, A. V.; Mustafin, K. V.** Technique of the application of ammonia fertilizers to sugar beet. *Khim. Sotsial. Zemled.* No. 9, 1936 (77-90). [R.]
- 633.63-1.85 -Engels, O.** Phosphates in beet cultivation. *Zuckerrubensbau* 16, 1935 (100). *C.A.* 29 (4874).
- 633.63-1.85 -Mitscherlich, E. A.** Studies of the effect of phosphoric acid in pot experiments. *Cong. Chim. Indust. 15th Cong. Brussels* 1935. *Inst. Belge Amélior. Better. Pub.* 6, 1935 (460). [F.]
- 633.63-1.85 Decoux, L.; Vanderwaeren, J.; Simon, J.** Phosphoric acid and the sugar-beet. *Inst. Belge Amélior. Better. Pub.* 4, 1936 (324-347). [F.d.u.g.e.]
- 633.63-1.85 Larmer, F. G.** Keeping quality of sugar beets as influenced by growth and nutritional factors. *J. Agric. Res.* 54, 1937 (185-198).
- 633.63-1.85 Strelnikova, M.** The physiological foundation for supplementing P nutrition of agricultural plants. *Khim. Sotsial. Zemled.* No. 6, 1937 (45-56). [R.]
- 633.63-1.853 Goepfert, E.** The place of basic slag in sugar beet manuring. *Zuckerrubensbau* 15, 1933 (30-34). *Bied. Zbl.* 64 (92). [G.]
- 633.63-1.855 Engels, O.** The effect of increased amounts of phosphate as superphosphate on the yield and sugar content of sugar beets. *Das Superphosphat* 11, 1935 (3-7). *C.A.* 29 (3447).
- 633.63-1.874 -Behm.** New theories and practices in the green manuring of loamy soils. *Zuckerrubensbau*, 15, 1933 (119-122). *Bied. Zbl.* 65 (221).
- 633.63-1.893 -Pusikov, D.** Compound fertilizers and sugar beet. *Trudy Tsent. Nauch. Inst. Sakh. Prom. (Moscow)* 2, 1934 (49). *Z.P.D.* 41 (232).
- 633.63-1.893.12 Shapiro, G.** A study of the effect of concentrated phosphoro-nitrogenous fertilizers. *Trudy Nauch. Inst. Udob.* 126, 1935 (40-43). [R.]
- 633.63-2.19 -Haan, K. de.** Diseases and enemies of the sugar beet. *Meded. Inst. Suikerbiet.* 5, 1935 (151-166). *F.A.S.* 30 (469).
- 633.63-2.19 Schreven, D. A. van.** The yellowing disease of sugar beets and its cause. *Meded. Inst. Suikerbiet.* 6, 1936, pp. 36. *E.S.R.* 75 (502). [Dut.]



# BIBLIOGRAPHY OF SOIL SCIENCE

- 633.63-2.19:546.15** **British Sugar Beet Review.** Iodine and boron in the control of beet diseases. *Brit. Sug. Beet Rev.* 8, 1935 (280).
- 633.63-2.19:546.27** **Foex, E.; Burgevin, H.** The heart rot of beets. *C.R. Acad. Agric.* 20, 1934 (978-982). C.A. 29 (2287). [F.]
- 633.63-2.19:546.27** **Nowotnówna, A.** The influence of boron on the development of soybeans and of sugar beets. *Mém. Inst. Nat. Pol. Econ. Rur. Pologne* 15, 1934 (19-36). C.A. 30 (7270).
- 633.63-2.19:546.27** **Solunskaja, N. I.** The effect of boron on the heart rot of sugar beet. *Nauch. Zap.* 11, 1934 (77-95). C.A. 29 (5575). [R.e.]
- 633.63-2.19:546.27** **Wimmer, G.; Lüdecke, H.** Is boron deficiency the cause of the heart and dry rot of sugar beet? *Zschr. Ver. Deut. Zuckerindust.* 84, 1934 (627). Z.P.D. 41 (367).
- 633.63-2.19:546.27** **Brandenburg, E.; Haan, K. de.** Physiological diseases of beets. III. Pot and held experiments on heart rot of beets. *Meded. Inst. Sinkerbet.* 4, 1935 (81-102).
- 633.63-2.19:546.27** **Brioux, G.; Jouis, E.** The effect of boron on disease of beets. *C.R. Acad. Agric.* 21, 1935 (1039-1042).
- 633.63-2.19:546.27** **Doerell, E. G.** Borax or borax-superphosphate as a preventative against heart and dry rot of beet. *Deut. Landw. Pr.* 62, 1935 (599-600). J.L.B. 5 (B216).
- 633.63-2.19:546.27** **Foex, E.; Burgevin, H.** New observations on the effect of boron on the heart diseases of beetroot. *C.R. Acad. Agric.* 21, 1935 (979-985). [F.]
- 633.63-2.19:546.27** **Haan, K. de.** Heart rot of sugar and forage beets. *Inst. Belge Amélior. Better. Pub.* 6, 1935 (408). [F.]
- 633.63-2.19:546.27** **Hughes, W.; Murphy, P. A.** Crown rot of sugar beet a boron deficiency. *Nature* 135, 1935 (395).
- 633.63-2.19:546.27** **Irish Free State Journal of the Department of Agriculture.** Crown rot in sugar beet. *Irish Free State Dept. Agric. J.* 33, 1935 (207-210). R.A.M. 15 (415).
- 633.63-2.19:546.27** **Kotila, J. E.; Coons, G. H.** Boron deficiency disease of beets in the United States. *Facts ab. Sug.* 30, 1935 (373-376).
- 633.63-2.19:546.27** **Meyer-Hermann, K.** Heart and dry rot of beets and its prevention. *Deut. Landw. Pr.* 62, 1935 (609). C.A. 30 (2310). [G.]
- 633.63-2.19:546.27** **Scharrer, K.** Importance of boron for the growth of beets and in combating heart and dry rot. *Zucker-rubensau* 17, 1935 (115-125). C.A. 29 (7556).
- 633.63-2.19:546.27** **Schumann, K.** Boron superphosphate and Bor-Am-Sup-Ka against heart and dry rot of beets. *Deut. Landw. Pr.* 62, 1935 (171). C.A. 30 (215). [G.]
- 633.63-2.19:546.27** **Scullard, E.** Heart rot of beet. *Bull. Tech. Chim. Fabr. Sucre* No. 26, 1935 (1134). F.a.S. 30 (148). C.A. 30 (3567).
- 633.63-2.19:546.27** **Decoux, L.; Vanderwaeren, J. et al.** How to cultivate sugar beet better. *Inst. Belge Amélior. Better. Pub.* No. 1, 1936, pp. 20.
- 633.63-2.19:546.27** **Decoux, L.; Vanderwaeren, J. et al.** Special considerations on the heart rot of sugar beet. *Inst. Belge Amélior. Better. Pub.* 4, 1936 (67-77). [F.d.u.g.]

## FERTILIZERS AND GENERAL AGRONOMY

- 633.63-2.19:546.27**—**Fertilizer Feeding Stuffs** *Journal*. Crown rot in sugar beet. *Fert. Feed. J.* 21, 1936 (583-584). [B.C.A. 56 (274).]
- 633.63-2.19:546.27**—**Gerlach, M.** Borax-phosphate fertilizer for beets. *Deut. Zuckerindust.* 61, No. 18, 1936 (399-400). [F.A.S. 31 (229).]
- 633.63-2.19:546.27**—**Guilbert, F.** Heart rot of the beetroot. *Bull. Assoc. Chim. Sucr.* 43, 1936 (23-30). [K.A.M. 15 (414).]
- 633.63-2.19:546.27**—**Hanley, F.; Mann, J. C.** The control of heart rot in sugar beet. *J. Min. Agric.* 43, 1936 (15-23).
- 633.63-2.19:546.27**—**Hauer, E.** Boron-superphosphate as a means of combating crown and dry root in beet root. *Wien. Landw. Ztg.* 88, 90, No. 14, 1936. *Superphosphate* 9 (211).
- 633.63-2.19:546.27**—**Kotila, J. E.** The boron deficiency disease of sugar beets. *Sug. Beet. J.* 1, No. 5, 1936 (74, 75, 80). [E.S.R. 76 (205).]
- 633.63-2.19:546.27**—**Meyer-Hermann, K.** The control of heart-and dry-rot of beets with boron. *Zuckerribenbau* 18, 1936 (51-58). [G.]
- 633.63-2.19:546.27**—**Neuweiler, E.** The control of heart-rot of sugar beets. *Landw. Jahrb. Schweiz* 50, No. 3, 1936 (273-291). [G.A.]
- 633.63-2.19:546.27**—**Schreven, D. A. van.** Heart rot of sugar beet and the results of pot experiments. *Meded. Inst. Suikerbiet.* 6, 1936, pp. 225. [Du.f.]
- 633.63-2.19:546.27**—**Brenchley, W. E.; Watson, D. J.** The influence of boron on the second year's growth of sugar beet affected with heart-rot. *Ann. Appl. Biol.* 24, 1937 (494-503).
- 633.63-2.19:546.27**—**Burgevin; Foex, E.** Heart rot of sugar beet in France. *C.R. Acad. Agric.* 23, 1937 (195-199). [F.]
- 633.63-2.19:546.27**—**Osvald, H.; Petersson, G.** Experiments with boron against heart rot. *LantbrHögsk. Ann.* 4, 1937 (233-258). [E.sw.]
- 633.63-2.19:546.56**—**Schreven, D. A. van.** Copper deficiency in sugar beets. *Phytopath.* 26, 1936 (1106-1117).
- 633.63-2.19:546.56**—**Schreven, D. A. van.** Copper deficiency in sugar beet. *Meded. Inst. Suikerbiet.* 2, 1936 (37-57). [Du.f.]
- 633.63-2.19:546.711**—**Haan, K. de.** Observations on practical sugar beet cultivation. IV. Manganese deficiency in sugar beet. *Meded. Inst. Suikerbiet.* 5, 1934 (123-127). [C.A. 29 (1197).]
- 633.63-2.19-1.415.3**—**Storck, G.** Is an alkaline soil reaction the cause of the heart and dry rot of sugar beet? *Bodenk. Pflernähr.* 1, 1936 (185-195). [G.]
- 633.63-2.19-1.416**—**Claus, E.** The forked root formation of beets in its relation to the nutrient content of soil. *Cbl. Zuckerindust.* No. 1, 1934 (12). [Z.P.D. 37 (124).] [G.]
- 633.63-2.19-1.811.2**—**Superphosphate.** Symptoms of phosphoric acid deficiency in various cultivated crops. *Superphosphate* 10, 1937 (156-160). [E.F.G.]
- 633.63-2.19-1.811.3**—**Wimmer, G.** The effect of potash deficiency on the development of sugar beet. *Ernähr. Pflanze* 33, 1937 (41-42). [G.e.sp.]
- 633.63-2.19-1.811.9**—**Dufrenoy, J.** Diseases of sugar beet, sugar cane, and cotton. *Cong. Int. Tech. Chim. Indust. Agric.* 5th Cong. Holland 1, 1937 (438-450). [B.C.A. 56 (958).]

## BIBLIOGRAPHY OF SOIL SCIENCE

- 633.63-2.19-1.821.1**—Decoux, L.; Vanderwaeren, J.; Roland, G. Researches carried out in 1936 on the heart rot of sugar beet. *Inst. Belge Amélior. Better. Pub.* 5, 1937 (187-192). [F.d.g.e.]
- 633.63-2.2-1.81**—Krüger, W.; Wimmer, G.; Lüdecke, H. *et al.* Influence of nematodes on yield and composition of sugar beets. *Ztschr. Wirtsch. Zuckerindust.* 85, 1935 (583-603, 623-679, 717-761).
- 633.63-2.2-1.81**—Wimmer, G.; Lüdecke, H. Influence of ecological and fertilizing measures on the content of beet nematode cysts in the soil. *Ztschr. Wirtschaftsgruppe Zuckerindust.* 86, 1936 (583-659). C.A. 31 (2338).
- 633.63-2.4-1.432.2**—Tompkins, C. M. Phytophthora rot of sugar beet. *J. Agric. Res.* 52, 1936 (205-216).
- 633.63-2.4-1.81**—Leach, L. D.; Davey, A. E. Soil amendments for sclerotium rot of sugar beet. *Phytopath.* 25, 1935 (896). C.A. 30 (5708).
- 633.63-2.953**—Vlasiuk, P. A.; Dobrotvorskaia, K. M. The influence of chloropicrin in increasing soil fertility, yields and the sugar beet quality. *Sborn. Rab. VNIIS* 1936 (296-312). [R.]
- 633.681-1.81**—Robinson, C. K. Manual experiments on arrowroot. *Rept. Agric. Dept. St. Vincent for 1934*, 1936 (5-21).
- 633.682-1.58**—Lambourne, J. The economic maintenance of soil fertility under continuous cropping with tapioca. *Malay. Agric. J.* 25, 1937 (134-145).
- 633.682-1.811**—Nijholt, J. A. Absorption of nutrients from the soil by a cassava-crop. *Korte Meded. Agr.-Proefsta. Landb.* No. 15, 1935, pp. 25. [Duc.]

### 633.7 STIMULANTS

- 633.71-1.4**—Darkis, F. R.; Dixon, L. F.; Gross, P. M. Flue-cured tobacco. *Indust. Engng. Chem.* 27, 1935 (1152-1157).
- 633.71-1.432**—Veen, R. v. d. Soil mapping, subterranean water and Besuki tobacco. *Meded. Besoek. Proefsta.* 54, 1935, pp. 22. [Duc.]
- 633.71-1.432.2**—Tolstopler, A. Ya. The effect of various amounts of moisture of the soil on the accumulation of nicotine in tobacco leaves. *Tabachnaya Prom.* No. 5, 1933 (22-26). C.A. 31 (1540). [R.]
- 633.71-1.432.2**—Peralta, F. de; Paguirigan, D. B. Effects of variation in moisture content of sandy loam soil in plots upon wrapper leaf tobacco. *Philipp. J. Agric.* 8, 1937 (7-24).
- 633.71-1.432.2:581.192**—Darkis, F. R.; Dixon, L. F. *et al.* Flue-cured tobacco. Correlation between chemical composition and stalk position of tobaccos produced under varying weather conditions. *Indust. Engng. Chem.* 28, 1936 (1214-1223).
- 633.71-1.434**—Cheliadinov, G. I. Soil structure and cigarette tobacco yield. *Vitim Sborn. Rab. Sekt. Agrotech.* No. 120, 1935 (102-138). [R.]
- 633.71-1.434**—Mann, A. J.; Barnes, S. Soil texture in relation to tobacco growing in British Columbia. *Canad. Dept. Agric. Bull.* 175, 1935, pp. 33. C.A. 30 (5344).
- 633.71-1.434**—McPhee, K. G. A comparison of the physical properties of some of the main types of flue-cured tobacco soils in Ontario. *Lighter* 7, 1937 (19-20).

# FERTILIZERS AND GENERAL AGRONOMY

- 633.71-1.434-1.582--Bykov, N. I.** Soil structure and crops preceding tobacco. *Vitim* No. 129, 1936 (3-31). [R.e.]
- 633.71-1.436- Kincaid, R. R.** Soil-temperature studies on Florida cigar-wrapper tobacco. *J. Agric. Res.* 51, 1936 (441-449).
- 633.71-1.44 -Bordeleau, R.** Seasonal experiments with tobacco. Tobacco varieties in relation to soil type. *Lighter* 5, 1935 (17-19).
- 633.71-1.44- Otryganiev, A. V.** The relation of soil type to the yield and quality of tobacco. *Trans. Third Int. Cong. Soil Sci.* 1, 1935 (264-265). [E.]
- 633.71-1.44 Williams, C. B.** The relation of soil character as expressed by certain soil types, to the choice of land for alfalfa and bright tobacco in the Piedmont region of North Carolina. *Amer. Soil Surv. Bull.* 17, 1936 (68-73).
- 633.71-1.445.72 Moore, E. S.; Henning, L. J.** Tobacco seedbeds on black turf soil. *Farm. S. Africa*, 12, 1937 (237-238).
- 633.71-1.453: 546.711- Bortner, C. E.** Toxicity of manganese to Turkish tobacco in acid Kentucky soils. *Soil Sci.* 39, 1935 (15-34). *Biol. Zbl.* 65 (353).
- 633.71-1.5 Dias, S. J. F.** The cultivation of tobacco with particular reference to cigarette tobacco and the blue-curing process. *Trop. Agrist.* 83, 1934 (267-276).
- 633.71-1.5 Hülsen, G.** Tobacco cultivation. *Hochland* 5, 1935 (257-261).
- 633.71-1.5 Livera, E. J.** The cultivation and curing of cigarette tobacco. *Trop. Agrist.* 85, 1935 (135-145).
- 633.71-1.5 Raghavachar, T. S.** Experiences regarding cultivation and curing of Virginia tobacco. *J. Mysore Agric. Expt. Sta.* 15, 1935 (49-59).
- 633.71-1.5 Brown, D. D.** Handling and curing Virginia bright tobacco. *Rhod. Agric. J.* 33, 1936 (20-25).
- 633.71-1.51 Krasinsky, A. P.** The effect of pulverizing the arable layer on tobacco yields and certain physico-chemical characters of the soil. *Trans. Soviet Sci. Int. Soc. Soil Sci.* Vol. 5, 1936 (148-162). [R.]
- 633.71-1.531.2 Buslova, E. D.** The influence of sowing depth on the emergence and later development of Makhorka (*Nicotiana Rustica* L.). *Physiol. Res. Makhorka Plants* 1, 1934 (83). *Z.P.D.* 41 (110). [R.]
- 633.71-1.544.7 Buriakov, P. I.; Solov'ev, A. P.** Soil mulching for tobacco. *Vitim Shern. Rab. Sels. Agrotekh.* No. 120, 1935 (3-33). [R.]
- 633.71-1.81 American Fertilizer.** Tobacco fertilizer recommendations for Southern states. *Amer. Fert.* 83, Sept. 7, 1935 (5-7). *J.U.B.* 4 (384).
- 633.71-1.81 -Hülsen, G.** Fertilizer experiments on tobacco carried out on a plantation in Ober-Deh during the years 1933,34. *Landw. Pflanze* 31, 1935 (206-207). [G.]
- 633.71-1.81 Leulliot, F.** Manuring of tobacco in the colonies. *Rev. Int. Tabacs* April, 1935 (17). *Rev. Bot. Appl.* No. 169 (727). [F.]
- 633.71-1.81 Queensland Agricultural Journal.** Tobacco fertilizer trials. *Queensland Agric. J.* 43, 1935 (207-217).
- 633.71-1.81 Turcotte, G. E.** Manure in the fertilization of cigar leaf. *Lighter* 5, 1935 (14-15).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 633.71-1.81—Cartmill, W. J. Tobacco fertilizer trials. *Queensland Agric. J.* 46, 1936 (71-91).
- 633.71-1.81—Haslam, R. J.; Murwin, H. F. Response of the tobacco plant to fertilizers in south-western Ontario. *Sci. Agric.* 17, 1936 (137-143).
- 633.71-1.81—McDonald, W. J. B. Tobacco investigations in Victoria, 1935-36. *J. Dept. Agric. Victoria* 34, 1936 (456-462).
- 633.71-1.81—Strickland, C. E. Report on fire-cured tobacco experiments, 1935-36. *Rhod. Agric. J.* 33, 1936 (848-857).
- 633.71-1.81—Thomas, J. J.; Haley, D. E.; Olson, O. The adsorption of plant nutrients in relation to the production of Pennsylvania cigar-leaf tobacco. *Penn. Agric. Expt. Sta. Bull.* 331, 1936, pp. 20. E.S.R. 76 (35).
- 633.71-1.81—Williams, C. B., et al. Tobacco fertilizer recommendations for 1936. *N.C. Agric. Expt. Sta. Agron. Inf. Circ.* 95, 1935, pp. 6. E.S.R. 74 (34).
- 633.71-1.81—Fernández-Casariello, I. S. Tobacco fertilizer tests in Spain. *Ernähr. Pflanze* 33, 1937 (45-48). [Gesp.]
- 633.71-1.81—Haley, D. E. Fertilizers for Pennsylvania cigar-leaf tobacco. *Amer. Fert.* 86, Feb. 20, 1937 (5-6, 26).
- 633.71-1.81—Marsh, T. D. Tobacco experiments at the Central Experiment Station, Serdang, 1933-35. *Malay. Agric. J.* 25, 1937 (318-328).
- 633.71-1.81—Turcotte, G. F. Fire-holding capacity of cigar tobacco. *Lighter* 7, 1937 (14-17).
- 633.71-1.81: 581.192—Geschin, A.; Bonis, E. de. Tobacco culture experiment on artificial soils. *Bull. Tec. Inst. Sper. Tab. Scutari*, 33, 1936 (197-199). [E.]
- 633.71-1.811—Stoklasa, J. The physiology of tobacco nutrition. *Lunda. Zitzagen Csl. Akad. Lunda.* 43, 1934 (21). Z.P.D. 43 (233).
- 633.71-1.811—Gavrilova, L. G. The mineral nutrition of *Nicotiana tabacum*. The effect of different doses of phosphate and potash on the growth and development of different tobacco varieties. *Bot. Zh.* 20, 1935 (10). Z.P.D. 45 (366). [R.]
- 633.71-1.811—Paguirigan, D. B.; Tergade, P. Wrapper tobacco. *Philipp. J. Agric.* 6, 1935 (1-114). E.S.R. 73 (610).
- 633.71-1.811—Tolstoplet, A. Ya. The requirements in water and fertilizers for the accumulation of nicotine in some types of *Nicotiana rustica* cultivated in the irrigated fields in the lower Volga region. *Tabachnaya Prom.* No. 3, 1935 (20-22). C.A. 30 (1492).
- 633.71-1.811: 581.144.2—McMurtrey, J. E., Jr. Cross transfer of mineral nutrients in the tobacco plant. *J. Agric. Res.* 55, 1937 (475-482).
- 633.71-1.811.3—Perez, R. The significance of potassium in manuring of tobacco. *Habano (Rev. Tabacalera)*, 1, No. 9, 1935. *Ernähr. Pflanze* 32, 1936 (184-185).
- 633.71-1.811.7—Heiserich, E. Investigations of the sulphur cycle in maize and tobacco. *Ztschr. Pflanz. Düng.* 37, 1935 (55-72). [G.]
- 633.71-1.811.7—Olendsky, V. I. The influence of the SH group on the growth of tobacco seedlings. *Vitum* No. 129, 1936 (43-51). [R.e.]

# FERTILIZERS AND GENERAL AGRONOMY

**633.71-1.811.8**—Wilson, L. B. The effects of chlorine, bromine, and fluorine on the tobacco plant. *J. Agric. Res.* 46, 1933 (889-899).

**633.71-1.813**—Kurchatov, P. A.; Rudenko, I. A. The effect of mineral fertilizers of different physiological characters and methods of application on the availability of phosphoric acid in the soil and on tobacco yield. *Vitum Sborn. Rab. Seht. Agrotech.* No. 119, 1935 (5-18). [R. e.]

**633.71-1.821.1:581.192** Darkis, F. R.; Dixon, L. F.; Wolf, F. A., et al. Flue-cured tobacco. Chemical composition of flue-cured tobaccos produced on limed and non-limed soils under varying weather conditions. *Indust. Engng. Chem.* 29, 1937 (1030-1039).

**633.71-1.83**—Haley, D. F.; Longenecker, J. B.; Olson, O. Composition and quality of Pennsylvania cigar-leaf tobacco as related to fertilizer treatment. *Plant Physiol.* 6, 1931 (177-182). *Biol. Abs.* 9 (289).

**633.71-1.83** Coolhaas, C. Potash fertilizer problems in the tobacco-growing district of Vorstenlanden, Java. *Ernähr. Pflanze* 32, 1936 (87-91). [G. e.]

**633.71-1.83** Saez, L. Fertilizer experiments on tobacco in Spain. *Ernähr. Pflanze* 33, 1937 (45-58). C.A. 31 (2732). [G. e.]

**633.71-1.83:581.192**—Kurchatov, P. A.; Lupinovich, I. S.; Buziuk, M. I. The effect of manuring on the accumulation of nitric acid in the leaves of makhorka under B.S.S.R. conditions. *Trudy Belorussk. S. Kh. Inst.* 5, 1936 (51-69). [R. e.]

**633.71-1.84**—Kurchatov, P. A.; Zaitseva, E. V.; Greshnov, P. D. The effect of nitrate-nitrate of soda on the yield of tobacco. *Vitum Sborn. Rab. Seht. Agrotech.* No. 119, 1935 (19-27). [R. e.]

**633.71-1.84**—Morgan, M. F.; Street, O. E. Rate of growth and nitrogen assimilation of Havana seed tobacco. *J. Agric. Res.* 51, 1935 (163-172). B.C.A. 54 (1061).

**633.71-1.84**—Selschotter, M. Nitrogenous fertilizing of tobacco. *Cong. Int. Tech. Chim. Indust. Agric. 4th Cong. Brussels*, 2, 1935 (376-382). C.A. 30 (4969).

**633.71-1.84**—Haslam, R. J. Relative value of different forms of nitrogen for tobacco. Pt. II. Summary of the results of experiments on flue-cured, Burley, and dark tobaccos, Dominion Experimental Station, Harrow, Ontario. *Lighter* 7, 1937 (12-15).

**633.71-1.84**—Stinson, F. A. Relative value of different forms of nitrogen for tobacco. *Lighter* 7, 1937 (11-14).

**633.71-1.842.2**—Veen, R. v. d. Tobacco manuring. *Meded. Reseck. Proefsta.* 56, 1937 (1-24). [Du. e.]

**633.71-1.85**—Lagatu, H.; Maume, L. Leaf diagnosis of tobacco. comparative effects of basic slag, superphosphate, and basic phosphate on the nitrogen-phosphorus-potassium equilibrium. *C.R.* 200, 1935 (502-504). B.C.A. 54 (422). [F.]

**633.71-1.85**—Hove, L. van. Phosphoric acid manuring of tobacco. *Onze Ploeg* 15, No. 3, 1936 (65). *Superphosphate* 9 (136-137). [Du.]

**633.71-1.85**—Lagatu, H.; Maume, L. Leaf diagnosis of tobacco. Comparison of the effects of slags, superphosphate and basiphosphate. *Ann. Ec. Nat. Agric. Montpellier*, 24, 1936 (3-6). [F.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- 633.71-1.893.123** Swanback, T. R.; Street, O. E.; Anderson, P. J. Further experiments with Nitrophoska. *Conn. Agric. Expt. Sta. Bull.* 350, 1933 (478). / P.D. 38 (172).
- 633.71-2-1.461** Beach, W. S. Control of tobacco wildfire. *Ill. Pa. Agric. Expt. Sta. Bull.* 322, 1935 pp. 29. B.C.A. 55 (613).
- 633.71-2-1.811** Lagatu, H.; Maume, L. Variations in the physiological relationships in correlation with wild fire disease of tobacco leaf. *C.R.* 201, 1935 (374-376). F.
- 633.71-2.19**—Spencer, E. L. Studies on trenching of tobacco. *Phytopath.* 25, 1935 (1067-1084).
- 633.71-2.19:546.27** McMurtrey, J. E. Boron deficiency in tobacco under field conditions. *J. Amer. Soc. Agron.* 27, 1935 (271-273).
- 633.71-2.19:546.621** Eisenmenger, W. S. Toxicity of aluminum salts to tobacco plants. *J. Agric. Res.* 51, 1935 (919-924).
- 633.71-2.19:546.683** Spencer, E. L. Trenching of tobacco and thallium toxicity. *Amer. J. Bot.* 24, 1937 (16-24). C.A. 31 (1935).
- 633.71-2.19-1.416.1** Beaumont, A. B. An hypothesis to explain brown root-rot of Havana seed tobacco. *Science* 84, 1936 (182-183).
- 633.71-2.19-1.811.2** Mes, M. G. Some observation on leaf spots of tobacco caused by phosphorus deficiency. *S. Agric. J. Sci.* 32, 1935 (246-256).
- 633.71-2.19-1.811.3** Poel, J. v. d. Report on investigations concerning the cause of wet stalks. *Medit. Del-Proefst.* 95 (ss.), 1937, pp. 19. (Duc.)
- 633.71-2.8-1.432.2** Hoggan, I. A.; Johnson, J. Behaviour of ordinary tobacco mosaic virus in the soil. *J. Agric. Res.* 52, 1936 (271-294). B.C.A. 55 (613).
- 633.71-2.8-1.51**—Lehman, S. Contaminated soil and cultural practices as related to occurrence and spread of tobacco mosaic. *N.C. Agric. Expt. Sta. Tech. Bull.* 46, 1934 (3-43). *Biol. Abs.* 30 (1368).
- 633.71-2.8-1.811**—Spencer, E. L. Influence of phosphorus and potassium supply on host susceptibility to yellow tobacco mosaic. *Phytopath.* 25, 1935 (493-502). B.C.A. 54 (691).
- 633.72-1.4:581.144.2**—Dzhenashia, A. A. Root development of the tea shrub. *Soviet. Subtrop.* No. 4, 1936 (41-46). (R.)
- 633.72-1.459**—Kvaratskhelia, T. K.; Akulova, T. A. Control of wash in tea plantations. *Soviet. Subtrop.* No. 11, 1935 (28-35). (R.)
- 633.72-1.461**—Obratzkov, A. A. Micro-organisms of the rhizosphere in Batum red earth soils. *C.R. Acad. Sci. (U.S.S.R.)* 4, 1934 (65-69). B.C.A. 55 (340). (F.)
- 633.72-1.584**—Huntley-Wilkinson, C. Ground cover on a Dimbula estate. *Tea Quart.* 8, 1935 (107-110).
- 633.72-1.81**—Eden, T. First pruning cycle of the Tea Research Institute: fertilizer trials. *Tea Quart.* 7, 1934 (83-92). B.C.A. 54 (245).
- 633.72-1.81**—Eden, T. The cultivation of tea. *Tea Quart.* 8, 1935 (177-182).
- 633.72-1.81**—Eden, T. Organic and inorganic manures. *Tea Quart.* 8, 1935 (126-132).

# FERTILIZERS AND GENERAL AGRONOMY\*

- 633.72-1.81—Eden, T.** Selected notes on the manuring of tea. *Tea Res. Inst. Ceylon Bull.* 16, 1936, pp. 20.
- 633.72-1.81:581.192—Blagoveshchensky, A. V.** Chemical composition of the tea leaf and the conditions under which it is grown. *Soviet. Subtrop.* No. 10, 1936 (18-23). [R.e.]
- 633.72-1.811—Bauer, A.** Nutrient requirements of the tea shrub. *Ernähr. Pflanze* 32, 1936 (165-169). [G.]
- 633.72-1.821.1—Menagarishvili, A. D.** Liming tea plantations. *Soviet. Subtrop.* No. 3, 1934 (21-26). *Pedology* 1937 (135).
- 633.72-183/4—Eden, T.** Studies in the yield of tea. Pt. III. Field experiments with potash and nitrogen in relation to the pruning cycle. *Emp. J. Expt. Agric.* 3, 1935 (105-118).
- 633.72-1.874—Eden, T.** Salient points in tea cultivation in relationship to green manures and shade trees. *Tea Quart.* 10, 1937 (110-116).
- 633.72-1.875—Eden, T.** Compost manufacture and use on tea estates. *Tea Quart.* 8, 1935 (79-84).
- 633.72-1.875—Eden, T.** Report on composting in relation to tea cultivation. *Tea Quart.* 8, 1935 (151-162).
- 633.72-2.112—Gadd, C. H.; Eden, T.** Drought conditions in relation to tea culture. I. Water and the plant. II. The soil as a water reservoir. *Tea Quart.* 8, 1935 (20-33). *Hort. Abs.* 5 (173).
- 633.73:551.58—Kirkpatrick, T. W.** Studies on the ecology of coffee plantations in East Africa. I. The climate and climate of coffee plantations. *E. Afric. Agric. Res. Sta. Ann. Pub.* 1935, pp. 66. *Hort. Abs.* 5 (174).
- 633.73:551.58—Walter, A.** The climate of the coffee areas of Kenya. *Coffee in Kenya, Kenya Dept. Agric.* 1937 (3-20).
- 633.73-1.4—Ferrière, J. F. de; Natier, E.** Banana soils of French Guinea and coffee soils of the Ivory Coast. *Rev. Bot. Appl.* 13, 1933 (30-45). *Ind. Zbl.* 6 (104). [F.]
- 633.73-1.4—Trench, A. D.** Notes on conditions influencing quality in coffee. *E. Afric. Agric. J.* 1, 1936 (281-282).
- 633.73-1.445.7—Milne, G.** Essays in applied pedology. I. Soil type and soil management in relation to plantation agriculture in East Usambara. *E. Afric. Agric. J.* 3, 1937 (7-20).
- 633.73-1.459—Iozano, C. L.** Problems of soil erosion. *Rev. Catet. Colombia* 5, 1933 (1707-1710). *Bull. Trop. Agric.* 1933 (65).
- 633.73-1.459—Jones, G. H. Gethin.** Conservation of soil fertility on coffee estates. *E. Afric. Agric. J.* 1, 1936 (456-462).
- 633.73-1.459—Fallon, F.** Soil erosion in coffee plantations. *Bull. Inst. Agron. Gembloux* 7, 1937 (120-130). [F. du g. e.]
- 633.73-1.5—Jones, G. H.** Coffee soils and their treatment. *Coffee in Kenya, Kenya Dept. Agric.* 1937 (21-57).
- 633.73-1.5—Trench, A. D. le Poer; Gillett, S.; McClelland, T. L.** Cultural practice and factory treatment. *Coffee in Kenya, Kenya Dept. Agric.* 1937 (58-112).
- 633.73-1.544.7—Luistro, F. D.; Evaristo, G.** The effect of mulching on the yield of Excelsa coffee: a progress report for 1932-1933. *Philipp. J. Agric.* 5, 1934 (17-19).
- 633.73-1.81—Quinzalme Coloniale.** The fertilizing of coffee. *Quinz. Colon.* 25, 1935 (32). *Rev. Bot. Trop.* 15 (651).
- 633.73-2—Bouriquet, G.** Coffee diseases in Madagascar. *Agron. Colon.* No. 193, 1934 (1-10, 42-48, 73-82, 109-117).



## BIBLIOGRAPHY OF SOIL SCIENCE

- 633.73-2.19—Beckley, V. A.** Observations on coffee in Kenya. I. Chlorosis and die-back in coffee. *Emp. J. Expt. Agric.* 3, 1935 (203-209).
- 633.73-2.19—Juriou, F.** Effect of climate on the brown-leaved type of arabica coffee. Preliminary study. Scorch of coffee bushes. *Inst. Nat. Ét. Agron. Congo Belge, Ser. Sci. Pub.* 6, 1936, pp. 19. *Hort. Abs.* 7 (257).
- 633.74-1.4—Hardy, F.** The chemical and ecological researches on cacao. *Trop. Agric. Trin.* 12, 1935 (175-178). *Hort. Abs.* 5 (176).
- 633.74-1.4—Hardy, F.; McDonald, J. A.; Rodriguez, G.** Cacao soil surveys. *Imp. Coll. Trop. Agric. Trinidad, Fourth Ann. Rept. Cacao Res.* 1934, 1935 (51-53).
- 633.74-1.4—Hardy, F.** Some aspects of cacao soil fertility in Trinidad. *Trop. Agric. Trin.* 13, 1936 (315-317).
- 633.74-1.4—McDonald, J. A.** Manurial experiments on cacao. *Imp. Coll. Trop. Agric. Trinidad, Fifth Ann. Rept. Cacao Res.* 1936 (34-43).
- 633.74-1.4—Hardy, F.; Rodriguez, G.** Cacao soil investigations. I. Some Gold Coast cacao soils. *Imp. Coll. Trop. Agric. Trinidad, Sixth Ann. Rept. Cacao Res.* 1936, 1937 (8-13).
- 633.74-1.415.1—Bondar, G.** Influence of soil acidity and alkalinity on the growth of cacao. *Campo. Biol.* 6, 1935 (40). *Hort. Abs.* 6 (63).
- 633.74-1.416.871.1—McDonald, J. A.; Rodriguez, G.** The manganese content of West Indian cacao soils. *Imp. Coll. Trop. Agric. Trinidad, Fifth Ann. Rept. Cacao Res.* 1935, 1936 (43-47).
- 633.74-1.466.1—Pyke, E. E.** Mycorrhiza in cacao. *Imp. Coll. Trop. Agric. Trinidad, Fourth Ann. Rept. Cacao Res.* 1934, 1935 (41-48).
- 633.74-1.5—Tissot, P.** Recent improvements in cacao cultivation and in the preparation of cacao in the world. *Re. Bot. Appl.* 15, 1935 (193-215). [F.]
- 633.74-1.544.7—McDonald, J. A.** Mulching experiments on cacao. *Imp. Coll. Trop. Agric. Trinidad, Fourth Ann. Rept. Cacao Res.* 1934, 1935 (64-74).
- 633.74-1.81—Pound, F. J.; Verteuil, J. de.** Studies of fruitfulness in cacao. VI. First year observations in an experiment designed to test the gross effects of applications of nitrogen, potassium and phosphorus on the cacao tree. *Imp. Coll. Trop. Agric. Trinidad, Fourth Ann. Rept. Cacao Res.* 1934, 1935 (19-25).
- 633.74-1.81—Pound, F. J.** A progress report of manurial experiments. *Proc. Agric. Soc. Trin. Tob.* 36, 1936 (445-456).
- 633.74-1.81—Pound, F. J.** Studies of fruitfulness in cacao. VIII. Second year observations in an experiment designed to test the gross effects of applications of N, K and P on the cacao tree. *Imp. Coll. Trop. Agric. Trinidad, Fifth Ann. Rept. Cacao Res.* 1935, 1936 (16-19).
- 633.74-1.81—Pound, F. J.** Studies of fruitfulness in cacao. IX. Differences between high-bearing and low-bearing cacao trees in response to inorganic manures. *Imp. Coll. Trop. Agric. Trinidad, Fifth Ann. Rept. Cacao Res.* 1935, 1936 (20-21).
- 633.74-1.81—Pound, F. J.** Studies of fruitfulness in cacao. X. Physiological effects of application of N, K and P on the cacao

## FERTILIZERS AND GENERAL AGRONOMY

tree. *Imp. Coll. Trop. Agric. Trinidad, Fifth Ann. Rept. Cacao Res.* 1935, 1936 (22-24).

**633.74-1.81** -**Pound, F. J.**; **Verteuil, J. de.** Results of manurial experiments on cacao at Marper. *Trop. Agric. Trin.* 13, 1936 (233-241).

**633.74-1.81** -**Hardy, F.** Manurial experiments on cacao in Trinidad: 1932-1936. *Imp. Coll. Trop. Agric. Trinidad, Sixth Ann. Rept. Cacao Res.* 1936, 1937 (24-34).

**633.74-1.81**; **581.192** -**McDonald, J. A.**; **Rodriguez, G.** The effect of manurial treatments on the chemical composition of cacao leaves: the diagnosis of soil crop nutrient requirements by means of leaf analysis. *Imp. Coll. Trop. Agric. Trinidad, Fourth Ann. Rept. Cacao Res.* 1934, 1935 (75-82).

**633.74-1.811** -**McDonald, J. A.** The mineral nutrition of plants. The possible application of recent ideas to the growth and manuring of the cacao tree. *Trop. Agric. Trin.* 12, 1935 (11-15).

**633.74-1.85** -**McDonald, J. A.** Manurial experiments on cacao. *Imp. Coll. Trop. Agric. Trinidad, Fourth Ann. Rept. Cacao Res.* 1934, 1935 (54-63).

**633.74-2-1.458** -**Moor, H. W.** Deforestation in the Bissa cocoa area. Gold Coast. *Malay. Forster* July, 1936, pp. 4.

**633.74-2.19** -**Park, M.** Further notes on cacao disease in the Dumbura valley, 1933. *Trop. Agricult.* 83, 1934 (78-86).

**633.74-2.19** -**McDonald, J. A.** Some effects of deficiencies of essential nutrient elements on the growth of young cacao plants. *Imp. Coll. Trop. Agric. Trinidad, Fourth Ann. Rept. Cacao Res.* 1934, 1935 (83-85).

**633.74-2.19-1.811.3** -**Hardy, F.** Marginal leaf-scorch of cacao. Its relationship to soil potash deficiency (with a note on the ecology of cacao thrips). *Imp. Coll. Trop. Agric. Trinidad, Sixth Ann. Rept. Cacao Res.* 1936, 1937 (13-24).

**633.75-1.81**; **581.192** -**Schmalfuss, K.** Influence of plant nutrition on the quality of poppy-seed oil. *Angew. Bot.* 18, 1936 (345-347). [C.A. 31 (798).] [G.]

**633.78-1.5** -**Hanley, F.**; **Tunnington, F.** Experiments on the growing of chicory (for drying). *Emp. J. Expt. Agric.* 4, 1936 (379-384).

**633.79-1.81** -**Burgess, A. H.** Manuring experiments on hops. *J. Inst. Brew.* 41, 1935 (198-206).

**633.79-1.81** -**Burgess, A. H.** The manuring of hops. *J. S.E. Agric. Coll. Wye*, No. 38, 1936 (55-56).

**633.79-1.81** -**Koch-Rohrbach, F. F.** Cultivation and fertilization of hops. *Das Superphosphat* 11, 1935 (45-46). [B.C.A. 55 (1116).] [G.]

**633.79-1.81** -**Zázvorka, V.** The effect of basal plant nutrients on the growth of hops. *Štern. Čsl. Akad. Zeměd.* 10, 1935 (409-415). [Cz. g.]

**633.79-1.81** -**Duchon, F.**; **Macek, K.** The effect of plant nutrients and some natural factors on the chemical composition of the ash of hop leaves in three stages of growth. *Štern. Čsl. Akad. Zeměd.* 11, 1936 (290-298). [Cz. g.]

**633.79-1.816.23** -**Burgess, A. H.**; **Goodwin, W.** Application of nitrogen and potash to hops during growth. *J. Inst. Brew.* 42, 1936 (461-463). [B.C.A. 55 (1116).]

## BIBLIOGRAPHY OF SOIL SCIENCE

- 633.79-1.83—Schwab, H.** The utilization of increasing amounts of potash by the hop plant. *Ernähr. Pflanze* 32, 1936 (373-376). [G.e.]

### 633.8 AROMATIC, MEDICINAL AND OIL PLANTS

- 633.812.426-1.5—Imperial Institute.** Lemongrass cultivation and distillation. *Bull. Imp. Inst.* 34, 1936 (63-65).

- 633.812.62-1.5—Tourneur, M.** Note on the cultivation of the rose geranium. *Bull. Econ. Madagascar* No. 3, 1935 (198-203). *Bull. Imp. Inst.* 34 (281).

- 633.812.764-1.81—Mazzaron, A.** The influence of different manuring on the production and composition of thyme. *Ital. Agric.* 72, 1935 (472-475). *Hort. Abs.* 5 (252).

- 633.822-1.411.4—Dünener, H.** The culture of peppermint on the small scale on peat soils. *Mitt. Ver. Moorkult. Berlin* 51, 1933 (89-90). *Biol. Ztg.* 64 (109). [G.]

- 633.822-1.5—Anon.** Peppermint: its cultivation and distillation. *Mon. Agric. Advis. Leaflet* 98, 1936, pp. 4. *Hort. Abs.* 7 (46).

- 633.822-1.81—Mazzaron, A.** The influence of different manuring on the production and composition of menthol. *Ital. Agric.* 72, 1935 (557-559). *Hort. Abs.* 5 (252).

- 633.832-1.5—François, E.** Clove tree and cloves. *Rev. Bot. Appl.* 16, 1936 (589-608).

- 633.841-1.4—Cochran, H. L.** Factors affecting flowering and fruit setting in the pepper. *Proc. Amer. Soc. Hort. Sci.* 20, 1933 (434-437). *Biol. Abs.* 9 (409).

- 633.841-1.4—Cochran, H. L.** Some factors influencing growth and fruit-setting in the pepper, *Capsicum frutescens* L. *Cornell Agric. Expt. Sta. Mem.* 190, 1936 (3-39). [C.A. 31 (6799).]

- 633.841-2.19-1.434—Hardon, H. J.; Neuteboom, J. D.** Results of an investigation of physical properties of pepper soils under field conditions in Bangka. *Kate. Medel. Agr.-Proekt. Landb.* 19, 1936, pp. 21.

- 633.842-1.5—Arango, R.** Cultivation, varieties, harvesting, packing and grading of chillies for export. *Rev. Agric. Cuba* 20, 1937 (37-46). *B.L.L.* 35 (390). [Sp.]

- 633.842-1.811—Horváth, F.; Bujk, G.** The nutrient absorption and nutrient requirement of the paprika plant. *Kisér. Kertész.* 37, 1934 (46-55). [C.A. 29 (1924).]

- 633.85-1.5—Reggio Calabria.** Report on work of the Royal Experimental Station at Reggio Calabria for essential oils and citrus extracts for 1929-1933. *Reggio Calabria*, 1934, pp. 30. *Hort. Abs.* 4 (243).

- 633.85-1.67—Ivanov, N. N.; Avsimovich, V. V.** Irrigation and the quality of the crop of oil-bearing plants. *Bull. Appl. Bot. Leningrad*, A, 1934 (81-94). [B.C.A. 55 (36).]

- 633.85-1.81—Fritzen, A.** Oil seed production in Germany. *Phosphorsäure* 5, 1935 (714-734). [G.]

- 633.852.253.3-1.5—Potter, T. I.** Some notes on the history of the Tonca bean (*Dipteryx odorata*) and its cultivation in Trinidad. *Proc. Agric. Soc. Trin. Tob.* 35, 1935 (417-428).

## FERTILIZERS AND GENERAL AGRONOMY

- 633.853.55-1.4**—**Santiago, W.** Concerning the castor oil plant. *Bol. Agric. Zootec. Vet. Minas Geraes* 11, 1935 (11-15). *Hort. Abs.* 6 (65).
- 633.853.55-1.5**—**Hochland.** Ricin culture in Brazil. *Hochland* 7, 1937 (236-240). B.L.I. 35 (391).
- 633.854.56 : 581.144.2**—**Iliashenko, K.** Root development of the tung tree. *Soviet. Subtrop.* No. 2, 1936 (14-17). *Hort. Abs.* 6 (308). [R.e.]
- 633.854.56-1.4**—**Echegaray, M.** The tung oil tree. *Econ. Tec. Agric. Madrid*, 4, 1935 (184-190, 221-225, 254-256). *Hort. Abs.* 6 (58).
- 633.854.56-1.4**—**Motte, J.** Aleurites cordata in Japan. *Agron. Colon.* 24, 1935, 210 (183-193); 211 (7-15). *Hort. Abs.* 5 (172).
- 633.854.56-1.4**—**Newell, W. ; Mowry, H., et al.** The tung-oil tree. *Fla. Agric. Expt. Sta. Bull.* 280, 1935 (5-67). C.A. 30 (216).
- 633.854.56-1.4**—**Cochran, H. L.** The tung-oil tree in Georgia. *Gea. Agric. Expt. Sta. Circ.* 108, 1936, pp. 8. E.S.R. 75 (493).
- 633.854.56-1.459**—**Gussak, V. B. ; Ambokadze, V. A.** Soil erosion survey of Kokhi tung oil state farm. *Soviet. Subtrop.* No. 4, 1936 (23-40). [R.e.]
- 633.854.56-1.5**—**Elden, H. van ; Phillips, E. P.** Tungnut growing. *S. Africa Dept. Agric. Bull.* 140, 1935, pp. 12.
- 633.854.56-1.5**—**Johnson, P. R. ; Yarnell, S. H.** The tung-oil tree in Texas. *Tex. Agric. Expt. Sta. Circ.* 75, 1935, pp. 16.
- 633.854.56-1.5**—**McGregor, C. J.** Notes on the tung-oil tree. *E. Afric. Agric. J.* 1, 1935 (127-130).
- 633.854.56-1.5**—**East African Agricultural Journal.** Prospects for the production of tung oil in East Africa. A comparison of the results attained in the trials of Aleurites Fordii and A. montana. *E. Afric. Agric. J.* 2, 1936 (101-110).
- 633.854.56-1.5**—**Pynaert, L.** Aleurites producing wood or tung oil. *Bull. Agric. Congo Belge* 27, 1936 (70-102).
- 633.854.56-1.5**—**Legros, J.** Present state of Aleurites cultivation in the British possessions. *Mo. Bull. Agric. Sci. Pract.* 28, 1937 (281-314T).
- 633.854.56-1.81**—**Legros, J.** The problem of application of fertilizers in Aleurites plantations. *Mo. Bull. Agric. Sci. Pract.* 28, 1937 (197T-205T).
- 633.854.56-2.19 : 546.47**—**Mowry, H. ; Camp, A. F.** Zinc sulphate as corrective for bronzing of tung trees. *Fla. Agric. Expt. Sta. Bull.* 273, 1934, pp. 34. B.C.A. 54 (603).
- 633.855.34 : 581.144.2**—**Lambourne, J.** Note on the root habit of oil palms. *Malay. Agric. J.* 23, 1935 (582-583).
- 633.855.34-1.5**—**Bauer, A.** The oil palm: an economic and agricultural study. *Landw. Pflanze* 32, 1936 (278-286). [G.e.]
- 633.855.34-1.5**—**Cairns, T. C.** The oil palm (Elaeis guineensis Jacq.) in the Kigoma District. *E. Afric. Agric. J.* 2, 1937 (451-454).
- 633.855.34-1.81**—**Belgrave, W. N. C.** Manuring experiments on oil palms. *Malay. Agric. J.* 23, 1935 (321-335).
- 633.855.34-1.81**—**Belgrave, W. N. C. ; Lambourne, J.** Manurial experiments on oil palms. *Malay. Agric. J.* 25, 1937 (286-296).

## BIBLIOGRAPHY OF SOIL SCIENCE

- 633.855.34-1.81**—Guest, E. Manurial experiments conducted by Messrs. Imperial Chemical Industries (Malaya) Ltd. *Malay. Agric. J.* 25, 1937 (297-299).
- 633.855.34-1.811**—Dennett, J. H.; Georgi, C. D. V. Nitrogen-potash ratio of oil-palm leaflets. *Malay. Agric. J.* 25, 1937 (152-156). B.C.A. 56 (710).
- 633.855.34-2.954.8**—Bunting, B.; Marsh, T. D. Effect of sodium chlorate used as a weed-killer among oil palms. *Malay. Agric. J.* 24, 1936 (22-25).
- 633.861.3-1.5**—Ramanna, N. Cultivation of turmeric in Hassan Taluk. *J. Mysore Agric. Expt. Un.* 15, 1935 (136-140).
- 633.881.15-1.81:581.192**—Parisi, R. Action of some fertilizers on *Digitalis purpurea* L. *Atti Soc. Ital. Prog. Sci.* 23, 111, 1935 (136-137). C.A. 29 (7000).
- 633.881.33-1.5**—Fleet, W. van. Golden seal under cultivation. *U.S.D.A. Farm Bull.* 613, 1936, pp. 13.
- 633.883.2-1.5**—Silveira, J. C. da. A study of the physic nut in the Cape Verde Islands. *An. Inst. Sup. Agron. Lisboa*, 6, 1934 (116-126). *Bull. Inst. Colon. Marseille Mat. Grasses* 18, 1934 (262-267). *Hort. Abh.* 4 (226).
- 633.883.259.43-1.466.1**—Muller, H. R. A.; Frémont, T. Mycorrhizal infection in the Cassia family (Caesalpinaceae). *Ann. Agron.* 5 (n.s.), 1935 (678-690). [F.]
- 633.885.1-1.5**—Coste, R. Cultivation of Cinchona in the Cameroons. *Bull. Inst. Colon. Havre*, 9, No. 91, 1937 (16-20). B.I.I. 35 (395).
- 633.885.1-1.811**—Yersin, A.; Lambert, A. Acclimatization tests of cinchona trees in Indochina. *Rev. Bot. Appl.* 15, 1935 (225-234). C.A. 29 (6686).
- 633.887.791-1.5**—Bulletin of the Imperial Institute. Cultivation of pyrethrum in Japan. *Bull. Imp. Inst.* 35, 1937 (318-333).
- 633.887.791-1.5**—Rinke, G. R. The pyrethrum outlook. *Soap* 13, 1937 (101-103).

## 633.91 RUBBER

- 633.91-1.4**—Eaton, B. J. Research and the rubber industry. *India-Rubber J.* 90, 1935 (527-529, 556-559). C.A. 30 (897).
- 633.91-1.4**—Hamilton, R. A. Notes on tropical soils with special reference to Malayan soils for rubber cultivation. *J. Rubber Res. Inst. Malaya* 7, 1936 (27-45).
- 633.91-1.5**—Monthly Bulletin of Agricultural Science and Practice. Review of the more important publications on rubber cultivation issued in 1934. *Mo. Bull. Agric. Sci. Pract.* 26, 1935 (4191-444T).
- 633.91-1.58**—Michaux, P. Investigations on the discrimination of adventitious plants in relation to the economy of soils of Hevea and Elaeis plantations in British Malaya. *C.R. Acad. Agr.* 21, 1935 (513-517). [F.]
- 633.91-1.58**—Moore, A. Replanting. *J. Rubber Res. Inst. Malaya* 6, 1935 (121-134).
- 633.91-1.81**—Vollema, J. S. The "nursery method" as an indicator for fertilizing Hevea plantations. *Arch. Rubbercult.* 18, 1934 (87-122). C.A. 29 (8207).

## FERTILIZERS AND GENERAL AGRONOMY

**633.91-1.81—De Silva, C. A.** Field experiments on Darton-held estate. II. Manuring experiment with mature rubber. *Rubber Res. Scheme (Ceylon) Quart. Circ.* 13, 1936 (63-65).

**633.91-1.81—Guest, E.** Manuring experiments on rubber. *Planter, Malaya* 18, 1937 (84-96).

**633.91-1.84 Haines, W. B. ; Guest, E.** Recent experiments on manuring Hevea and their bearing on estate practice. *Emp. J. Expt. Agric.* 4, 1936 (300-324).

**633.91-2.954 -Akhurst, C. G.** Use of weed-killers in the control of natural covers. *J. Rubber Res. Inst. Malaya* 6, 1935 (111-120).

**633.913-1.81—Lukovnikov, E. K.** Results of investigations on the nutrition of rubber producing plants. *Khim. Sotsial. Zemel* No. 6, 1936 (56-71).

**633.919-1.811 -Novikov, V. A.** Physical characters of dark serozems. *Reclam. Deserts Cent. Asia* 1934 (195-206). [R.]

## 634 ORCHARDS. FRUIT TREES

**634-1.411.1: 581.144.2 -Fujimura, J. ; Yasuda, R.** Studies on root systems of fruit trees grown in sandy soil. *J. Hort. Assoc. Japan* 5, 1934 (69-101). *Hort. Abs.* 4 (184). [J.]

**634-1.411.3: 581.144.2 Clark, E. R.** Root penetration of nine mature trees on heavy silt loam soils. *Panhandle Agric. Expt. Sta. Bull.* 55, 1934 (13-16).

**634-1.453: 546.19 -Snyder, J. C.** Crops planted in pulled orchards. *Proc. Wash. St. Hort. Assoc.* 31, 1936 (48-54). *Hort. Abs.* 6 (107).

**634-1.453: 581.192 -Oppenheimer, H. R.** Injurious salts and the ash composition of fruit trees. *Hadar* 10, 1937 (91-94).

**634-1.453: 581.192—Oppenheimer, H. R.** Injurious salts and the ash composition of fruit trees. *Hadar* 10, 1937 (125-133).

**634-1.81—Wallace, T.** Manuring of fruit crops. *Min. Agric. Bull.* 107, 1937, pp. 47.

**634-1.81: 581.192 -Degman, E. S.** Studies on firmness and keeping quality of certain fruits. I. Effects of nitrogen fertilization. II. Effects of potassium fertilization. *Mod. Agric. Expt. Sta. Bull.* 366, 1934 (43-98).

**634-1.811 Haas, A. R. C.** Growth response of tree tops relative to soil treatment. *Calif. Citrog.* 20, 1934 (36). *Hort. Abs.* 4 (179).

**634-1.811 Vogel, F.** Experiments on the nutrition and soil fatigue of nursery trees. *Gartenbauzeit.* 51, 1934. *Raumschule* 18. *Bod. Zbl.* 6 (545). [G.]

**634-1.811 Meier, K.** Fertilizers for fruit trees. *Schweiz. Ztschr. Obst- u. Weinb.* 44, 1935 (145-155). C.A. 29 (7001).

**634-1.811 Read, F. M. ; Cole, C. E.** Mineral nutrition in Victorian fruit trees. *J. Aust. Inst. Agric. Sci.* 1, 1935 (33-34).

**634-1.811—Uphall, W. H. ; Ruhnke, G. N.** Growth of fruit tree stocks as influenced by a previous crop of peach trees. *Sci. Agric.* 16, 1935 (16-20). *Hort. Abs.* 5 (204).

**634-1.811 -Vlasluc, P. A. ; Rubin, S. S. ; Musich, N. I., et al.** The intake of nutrients by fruit crops. *Khim. Sotsial. Zemel.* Nos. 7-8, 1936 (71-77). [R.]

# BIBLIOGRAPHY OF SOIL SCIENCE

**634-1.811.91**—Anagnostopoulos, P. T. Moisture requirements of trees related to irrigation and tillage of the soil. *Hort. Res. Athens* 1, 1936 (5-28). *Hort. Abs.* 7 (17).

**634-1.83**—Beaumont, J. H.; Chandler, R. F. A statistical study of the effect of potassium fertilizers upon the firmness and keeping quality of fruits. *Proc. Amer. Soc. Hort. Sci.* 30, 1933 (37-44). E.S.R. 72 (186).

**634-2.19**—Van Haarlem, J. R. Some results of mineral deficiency studies. *Finland Hort. Expt. Sta. Ontario Pub.* (undated), pp. 10. *Hort. Abs.* 7 (213).

**634-2.19:546.47**—Chandler, W. H.; Hoagland, D. P.; Hibbard, P. L. Little-leaf or rosette of fruit trees. II. Effect of zinc and other treatments. *Proc. Amer. Soc. Hort. Sci.* 29, 1933 (255-263). R.A.M. 13 (40).

**634-2.19:546.47**—Ballard, W. S.; Lindler, R. C. Studies of the little-leaf disease in California. *Proc. Amer. Soc. Hort. Sci.* 31, 1934 (1-10). E.S.R. 75 (800).

**634-2.19:546.47**—Chandler, W. H.; Hoagland, D. R. Hibbard, P. L. Little-leaf or rosette of fruit trees. *Proc. Amer. Soc. Hort. Sci.* 31, 1934 (11-19). E.S.R. 75 (799).

**634-2.19:546.47**—Hoagland, D. R.; Chandler, W. H.; Hibbard, P. L. Little-leaf or rosette of fruit trees. V. Effect of zinc on the growth of plants of various types in controlled soil and water culture experiments. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (131-141). R.A.M. 15 (730).

**634-2.19:546.47**—Kozlowski, A. Soil conditions in relation to little-leaf or rosette of fruit trees in California. *Phytopath.* 26, 1936 (1041-1049). C.A. 31 (798).

**634-2.19:546.47**—Chandler, W. H. Zinc as a nutrient for plants. *Bot. Gaz.* 98, 1937 (625-646).

**634-2.19:546.56**—Pittman, H. A. Exanthema of citrus, Japanese plums and apple trees in Western Australia. *J. Dept. Agric. W. Aust.* 13, 1936 (187-193). R.A.M. 15 (730).

**634-2.19-1.433.2**—Furneaux, B. S.; Kent, W. G. "The death". A trouble of fruit trees due to root suffocation. *Sci. Hort.* 5, 1937 (67-77). *Hort. Abs.* 7 (120).

**634-2.19-1.841.5**—Cardinell, H. A.; Gray, G. F. Defoliation from the use of calcium cyanamid. *Mich. Agric. Expt. Sta. Quart. Bull.* 17, 1935 (101-105). *Hort. Abs.* 5 (70).

**634-2.191:546.72**—Aylunofe, S. F. Chlorosis of fruit plants and methods for controlling it. *Nauch. Phytodod. Michurinsk* No. 6, 1935 (12-32). E.S.R. 76 (645).

**634-2.191:546.72**—Wallace, T. Investigation on chlorosis of fruit trees. V. The control of lime-induced chlorosis by injection of iron salts. *J. Pomol. Hort. Sci.* 13, 1935 (54-67).

**634.1 7-1.4**—Fagan, F. N. Twenty-five years of orchard soil fertility experiments. *Proc. Va. Hort. Soc.* 38, 1934 (81-91). *Va. Fruit* 22 (1). *Biol. Abs.* 9 (1356).

**634.1 7-1.4**—Oskamp, J. Soils in relation to fruit growing. VIII. Tree behaviour on important soil profiles in Medina-Lyndonville-Carlton area, Orleans County. *Cornell Agric. Expt. Sta. Bull.* 633, 1935, pp. 22. R.C.A. 55 (562).

## FERTILIZERS AND GENERAL AGRONOMY

**634.1/7-1.4 -Partridge, N. L.; Veatch, J. O.** Selection of orchard sites in Southern Michigan. *Mich. Agric. Expt. Sta. Circ.* 155, 1936, pp. 27.

**634.1/7-1.4 :541.134.5 Batjer, L. P.** Seasonal variation in oxidation-reduction potential of some orchard soils. *Proc. Amer. Soc. Hort. Sci.* 30, 1933 (98-101). C.A. 28 (7394).

**634.1/7-1.416 Collison, R. C.** Potash and phosphorus in relation to organic matter in New York orchards. *N.Y. St. Agric. Expt. Sta. Bull.* 679, 1937, pp. 27.

**634.1/7-1.421 Strickland, A. G.** The investigation of orchard fertilizer requirements. *J. Aust. Inst. Agric. Sci.* 2, 1936 (148-150).

**634.1/7-1.432 Oskamp, J.** Ground water as a measure of the suitability of a soil for orchard purposes. *Proc. Amer. Soc. Hort. Sci.* 30, 1933 (410-414). E.S.R. 72 (477).

**634.1/7-1.432 Fikry, A.** Water-table effects. II. Relative incidence of diseases on stone-fruit trees. *Egypt Min. Agric. Bull.* 154, 1936, pp. 52.

**634.1/7-1.432.2 Magness, J. R.** Status of orchard soil moisture research. *Proc. Amer. Soc. Hort. Sci.* 31, 1934 (651-661). E.S.R. 75 (343).

**634.1/7-1.432.2 Wiggans, C. C.** The effect of orchard plants on subsoil moisture. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (103-107). *Hort. Abs.* 6 (246).

**634.1/7-1.459 Clayton, E. S.** Control of erosion on orchard lands. *Agric. Gaz. N.S.W.* 46, 1935 (3-7).

**634.1/7-1.5 Davis, M. B.; Ross, W. A.; Chamberlain, G. C.** Modern orchard practices. *Canada Dept. Agric. Bull.* 172, 1934, pp. 59.

**634.1/7-1.5 Hoblyn, T. N.; Grubb, N. H.; Painter, A. C. et al.** Studies in biennial bearing. I. *J. Pomol. Hort. Sci.* 14, 1936 (39-76).

**634.1/7-1.5 Schulz, F.** Orchard planting and cultivation in relation to each other. *ForschDienst.* 2, 1936 (162-167). G.

**634.1/7-1.5 Sayed, I. A.** Root exposure. *Poona Agric. Coll. Mag.* 28, 1937 (144-147). *Hort. Abs.* 7 (195).

**634.1/7-1.5 :581.192 Wallace, T.** Orchard factors affecting the quality of fruits. *J. Soc. Chem. Indust.* 56, 1937 (695-697).

**634.1/7-1.512 Fowler, R.** Tests to determine the effect of digging or deep ploughing close to fruit trees while in full bloom. *J. Dept. Agric. S. Aust.* 38, 1935 (784-785). *Hort. Abs.* 5 (139).

**634.1/7-1.544.7 Ellenwood, C. W.** Influence of orchard soil management on tree growth. *Ohio Agric. Expt. Sta. Bimo. Bull.* 22, No. 185, 1937 (56-58).

**634.1/7-1.584 Singleton, H. P.** Cover crops in irrigated orchards. *Proc. Wash. St. Hort. Assoc.* 30, 1935 (94-96). *Hort. Abs.* 5 (213).

**634.1/7-1.584 Morris, O. M.** Orchard cover crops. *Proc. Wash. St. Hort. Assoc.* 31, 1936 (65-67). *Hort. Abs.* 6 (104).

**634.1/7-1.584 Schulz, F.** Mutual effects of fruit tree and undergrowth cultivation. *Landw. Jahrb.* 82, 1936 (697-776). *Herb. Abs.* 6 (218). G.

**634.1/7-1.584 Stephenson, R. E.** Humus and cover crops in relation to orcharding. *Proc. Wash. St. Hort. Assoc.* 31, 1936 (59-64). *Hort. Abs.* 6 (105).



## BIBLIOGRAPHY OF SOIL SCIENCE

- 634.1 7-1.67**—Claypool, L. L. Irrigation of orchards. *Proc. Wash. St. Hort. Assoc.* 30, 1934 (98-104). E.S.R. 73 (180).
- 634.1 7-1.67**—Taylor, C. A. Orchard tillage under straight-turrow irrigation. *Agric. Engng.* 16, 1935 (99-102).
- 634.1 7-1.67**—Wickersham, C. P. Orchard hillside irrigation with porous hose. *Proc. Wash. St. Hort. Assoc.* 30, 1935 (97). *Hort. Abs.* 5 (212).
- 634.1 7-1.67**—McCutcheon, W. Hints on orchard irrigation. *Agric. Gaz. N.S.W.* 47, 1936 (33-34). *Hort. Abs.* 6 (105).
- 634.1 7-1.81**—Olney, A. J.; Waltman, C. S. Orchard fertilizer problems. *Trans. Ky. St. Hort. Soc.* 1932 (61-68). B.C.A. 54 (1157).
- 634.1 7-1.81**—Proebsting, E. L.; Kinman, C. F. Orchard trials of nitrogen and phosphorus. *Proc. Amer. Soc. Hort. Sci.* 30, 1933 (426-430). E.S.R. 72 (338).
- 634.1 7-1.81**—Felzmann. Results of a 10-year orchard manuring test. *Obst-u. Gemüsch.* 1, 1934 (7). Z.P.D. 37 (363).
- 634.1 7-1.81**—Kroft, W. G. Manuring orchards (in Holland). *Comptes. 11th Int. Hort. Cong. Rome*, 1935, pp. 8. *Hort. Abs.* 5 (211). (G.I.).
- 634.1 7-1.81**—Read, F. M. Soil fertility in the orchard. Artificial and green manures. *J. Dept. Agric. Victoria* 34, 1936 (128-134, 150).
- 634.1 7-1.84**—Murneek, A. E. Fertilizing fruit trees with nitrogen. *Missouri Agric. Expt. Sta. Bull.* 363, 1936, pp. 20.
- 634.1 7-1.855**—Potter, G. F. Results of incorporating a heavy application of superphosphate deeply into an orchard soil. *Proc. Amer. Soc. Hort. Sci.* 31, 1934 (70-72). E.S.R. 74 (200).
- 634.1 7-1.855**—Lilleland, O. Phosphate response with closely planted one-year-old fruit trees. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (114-119). C.A. 30 (7757).
- 634.1 7-1.875**—Nicholson, R. M. Humus is vital for orchards and vineyards. *Farm. Week. S. Africa* 53, 1937 (1732-1733).
- 634.1 7-2.951**—Jones, J. S.; Hatch, M. B. The significance of inorganic spray residue accumulations in orchard soils. *Soil Sci.* 44, 1937 (37-61).
- 634.11 : 581.144.2**—Susa, T. Studies on the distribution of apple roots and methods of cultivation. *Jap. Min. Agric. Lit. Agric. Improvements* 81, 1934 (207-228). *Hort. Ab.* 4 (184). J.C.
- 634.11 : 581.144.2**—Marth, P. G. Study of the root distribution of Stayman apple trees in Maryland. *Proc. Amer. Soc. Hort. Sci.* 32, 1935 (334-337). *Hort. Abs.* 5 (133).
- 634.11 : 581.144.2**—Rogers, W. S. Root studies. VI. Apple roots under irrigated conditions, with notes on use of a soil moisture meter. *J. Pomol.* 13, 1935 (190-201). *Hort. Abs.* 5 (204).
- 634.11 : 581.144.2**—Rybakov, M. The root system of apple trees on deep and degraded chernozems. *Tran. Soviet Soil Int. Soc. Soil Sci.* 5, 1936 (453-480). (R).
- 634.11-1.4**—Furneaux, B. S. Selection of soils for dessert apple growing. *Sci. Hort.* 3, 1935 (42-54).
- 634.11-1.414.2**—Partridge, N. L.; Veatch, J. O. Influence of various phases of Bellafontaine fine sandy loam and Whithersaw silt loam on growth of apple trees. *Proc. Amer. Soc. Hort. Sci.* 33, 1935 (124-130). B.C.A. 56 (600).

## FERTILIZERS AND GENERAL AGRONOMY

- 634.11-1.417—Batjer, L. P.** Soil variation and its relation to winter killing of roots of young apple trees. *Proc. Amer. Soc. Hort. Sci.* 31, 1934 (230-233). E.S.R. 73 (477).
- 634.11-1.432.2—Rogers, W. S.** Soil moisture studies. I. Water utilization by apple trees in cultivated and grass orchard compared with fallow land. *E. Malling Res. Sta. Ann. Rept.* 1936 (105-109).
- 634.11-1.432.2-1.416.1—Baker, C. E.** The relation of nitrogen and soil moisture to growth and fruitfulness of apple trees under different systems of soil management. *Indiana Agric. Expt. Sta. Bull.* 414, 1936, pp. 36. E.S.R. 77 (337).
- 634.11-1.5—Bagenal, N. B.; Turner, A. D.** Dwarf pyramid apple culture at Cannington. *Sci. Hort.* 4, 1936 (67-74).
- 634.11-1.5—Barker, B. T. P.** Cider apple production. *Min. Agric. Bull.* 104, 1937, pp. 75.
- 634.11-1.544.7—Shaw, J. K.; Southwick, L.** Heavy mulching in bearing apple orchards. *Mass. Agric. Expt. Sta. Bull.* 328, 1936, pp. 15.
- 634.11-1.563-1.81—Hopkins, E. F.; Gourley, J. H.** A study of the ash constituents of apple fruits during the growing season. *Ohio Agric. Expt. Sta. Bull.* 519, 1933, pp. 30.
- 634.11-1.563-1.84—Plagge, H. H.** The storage behaviour of apples as influenced by nitrogen fertilization and storage temperature. *J. Sci. Iowa St. Coll.* 9, 1934 (95-114).
- 634.11-1.67—Magness, J. R.; Degman, E. S.; Furr, J. R.** Soil moisture and irrigation investigations in Eastern apple orchards. *U.S.D.A. Tech. Bull.* 491, 1935, pp. 35.
- 634.11-1.81—Browne, F. S.** Nutrient requirements of apple trees. *Quebec Pomol. Fruit-Grow. Soc. 38th Ann. Rept.*, 1931 (75-84). B.C.A. 54 (117).
- 634.11-1.81—Fletcher, L. A.** A study of the factors influencing red color on apples. *Md. Agric. Expt. Sta. Bull.* 353, 1933 (79-119). *Biol. Abs.* 10 (1250).
- 634.11-1.81—Collison, R. C.; Harlan, J. D.** Fertilizer responses of Baldwin apple trees on an acid soil. *N.Y. St. Agric. Expt. Sta. Bull.* 646, 1934, pp. 24. B.C.A. 54 (245).
- 634.11-1.81—Collison, R. C.; Harlan, J. D.** Winter injury of Baldwin apple trees and its relation to previous tree performance and nutritional treatment. *N.Y. St. Agric. Expt. Sta. Bull.* 647, 1934, pp. 13. B.C.A. 54 (246).
- 634.11-1.81—Overley, F. L.; Overholser, E. L.** Progress report of fertilizer studies with apples. *Proc. Wash. St. Hort. Assoc.* 30, 1934 (45-49). E.S.R. 73 (180).
- 634.11-1.81—Overley, F. L.; Overholser, E. L.** Progress report of fertilizer studies with Jonathan apples upon Ephrata fine sandy loam. *Wash. Agric. Expt. Sta. Bull.* 319, 1935, pp. 32.
- 634.11-1.81—Collison, R. C.; Anderson, L. C.** Fertilizer experiments in the Morganthau orchard—six years' results with nineteen treatments. *N.Y. St. Agric. Expt. Sta. Bull.* 661, 1936, pp. 32.
- 634.11-1.81—Veisenberg, N. N.; Driapak, F. M.** Effect of mineral fertilizers on the growth and fruit production of apples. *Nauch. Phytosodstvo* No. 1, 1936 (18-27). [R.]
- 634.11-1.81—Larson, C. A.** Effect of continued application of irrigation water and commercial fertilizers to Ephrata fine sand in

# BIBLIOGRAPHY OF APPLE RESEARCH

the Wenatchee orchard district. *Wash. St. Coll. Res. Stud.* 5, 1937 (22). C.A. 31 (5089).

**634.11-1.81:541.144.7—Overholser, E. L.; Overley, F. L.** Fertilizers as related to leaf area in apple production. *Proc. Amer. Soc. Hort. Sci.* 30, 1933 (52-54). E.S.R. 72 (186).

**634.11-1.81:541.144.7—Heinicke, A. J.** Photosynthesis in apple leaves during late fall, and its significance in annual bearing. *Proc. Amer. Soc. Hort. Sci.* 32, 1934 (77-80). C.A. 29 (8207).

**634.11-1.81:581.192—Askew, H. O.** Changes in the chemical composition of developing apples. *J. Pomol.* 13, 1935 (232-246). *Hort. Abs.* 5 (209).

**634.11-1.811.3—Shaw, J. K.** Some experiences with the Thornton test for potash in apple trees. *Proc. Amer. Soc. Hort. Sci.* 31, 1932 (56-60). E.S.R. 75 (545).

**634.11-1.83—Chandler, R. F.** A study of the effect of various potassium carrying fertilizers upon the growth and yield of apples and peaches. *Proc. Amer. Soc. Hort. Sci.* 30, 1933 (67-69). E.S.R. 72 (185).

**634.11-1.83:581.192—Chandler, R. F.** Absorption, distribution, and seasonal movement of potassium in young apple trees and the effect of potassium fertilizer on potassium and nitrogen content and growth of trees. *J. Agric. Res.* 53, 1936 (19-42).

**634.11-1.84—Potter, G. F.** Spring and mid-summer applications of nitrogen in the apple orchard. *Proc. Amer. Soc. Hort. Sci.* 30, 1933 (164-168). E.S.R. 72 (336).

**634.11-1.84—Verner, L.** Effects of nitrate fertilization on apple fruits. *Proc. Amer. Soc. Hort. Sci.* 30, 1933 (32-36). E.S.R. 72 (186).

**634.11-1.84—Lagassé, F. S.** Effect of applying nitrogen at various times and in various amounts to Yellow Transparent apples. *Trans. Peninsula Hort. Soc.* 1934 (66-71). B.C.A. 55 (385).

**634.11-1.84—Marsh, R. S.** Additional studies on the effect of commercial forms of nitrogenous fertilizers as applied to apple trees. *Proc. Amer. Soc. Hort. Sci.* 31, 1934 (76). E.S.R. 74 (203).

**634.11-1.84—Marth, P. C.** Response to nitrogen fertilizers applied in different areas under Rome apple trees. *Proc. Amer. Soc. Hort. Sci.* 31, 1934 (73-75). E.S.R. 74 (203).

**634.11-1.84—Allen, F. W.** The influence of sugar, nitrogen fertilizers and of ringing Gravenstein apple trees upon colour and maturity of the fruit. *Proc. Amer. Soc. Hort. Sci.* 32, 1935 (52-55). *Hort. Abs.* 5 (141).

**634.11-1.84—Lagassé, F. S.** Some responses of yellow transparent apple trees in Delaware to various nitrogen treatments. *Del. Agric. Expt. Sta. Bull.* 195, 1935, pp. 42.

**634.11-1.84—Schrader, A. L.** Comparisons of various nitrogen fertilizers especially in relation to fall applications versus spring applications. *Trans. Peninsula Hort. Soc.* 25, No. 5, 1936 (81-85). *Hort. Abs.* 6 (244).

**634.11-1.84—Litvynski, M.** Effect of a large amount of nitrogen on the growth of *Pyrus Malus* Mill. *Russ. Nauch. Rechn.* 33, 1936 (299-312). [P.L.].

**634.11-1.84—Smith, G. E.** Studies of fall and spring applications of nitrogen fertilizers to apple trees. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (120-123). C.A. 30 (7757).

## FERTILIZERS AND GENERAL AGRONOMY

- 634.11-2.111-1.81—Browne, F. S.** Hardiness in relation to fertilizer application. *Pom. Fruit Grow. Soc. Quebec 41st Ann. Rept.* 1934 (22-24). C.A. 30 (1493).
- 634.11-2.19: 546.27—Askew, H. O.** The boron status of fruit and leaves in relation to "internal cork" of apples in the Nelson district. *N.Z. J. Sci. Tech.* 17, 1935 (388-391).
- 634.11-2.19: 546.27—Askew, H. O.** Internal cork of apples. Progress on boron investigations at the Cawthron Institute. *Orchard, N.Z.* 9, 1936 (185-188). *Hort. Abs.* 7 (121).
- 634.11-2.19: 546.27—Askew, H. O.; Chittenden, E.; Thomson, R. H. K.** The influence of borax top dressing on the boron status of soil, fruit and leaves. *J. Pomol.* 14, 1936 (227-228). C.A. 31 (201).
- 634.11-2.19: 546.27—Askew, H. O.; Chittenden, E.; Thomson, R. H. K.** The use of borax in the control of "internal cork" of apples. *N.Z. J. Sci. Tech.* 18, 1936 (365-380). *Cawthron Inst. Pub.* 14.
- 634.11-2.19: 546.27—Atkinson, J. D.** The control of corky pit of apples in New Zealand. *N.Z. J. Sci. Tech.* 18, 1936 (381-390). C.A. 31 (2729).
- 634.11-2.19: 546.27—Davis, M. B.** Nutrition of fruit trees. *Canad. Soc. Tech. Agrists.* Jan. 1936 (380-383) and *Dominion Expt. Farms Div. Hort. Contr.* 450. *Fruit Grower* 83 (236).
- 634.11-2.19: 546.27—Hill, H.; Davis, M. B.** Physiological disorders of apples. *Sci. Agric.* 17, 1936 (199-208). [E.I.]
- 634.11-2.19: 546.27—Jamaalain, E. A.** The effect of boron on cork disease of apples. *Valt. Maat. Julk.* 89, 1936 (5-19). R.A.M. 16 (324).
- 634.11-2.19: 546.27—McLarty, H. R.** Tree injections with boron and other materials as a control for drought spot and corky core of apple. *Sci. Agric.* 16, 1936 (625-633). *Hort. Abs.* 6 (259).
- 634.11-2.19: 546.27—Piper, C. S.** The boron status of South Australian apples. *Aust. J. Coun. Sci. Indust. Res.* 9, 1936 (245-248). B.C.A. 56 (273).
- 634.11-2.19: 546.27—Young, L. C.; Bailey, C. F.** Corky core of apples. Progress report. *Sci. Agric.* 17, 1936 (115-127). C.A. 31 (1941).
- 634.11-2.19: 546.27—Askew, H. O.; Thomson, R. H. K.** Occurrence of internal cork of apples in Central Otago, New Zealand. *N.Z. J. Sci. Tech.* 18, 1937 (661-664).
- 634.11-2.19: 546.27—Carne, W. M.; Martin, D.** Preliminary experiments in Tasmania on the relation of internal cork of apples and cork of pears to boron deficiency. *Aust. J. Coun. Sci. Indust. Res.* 10, 1937 (47-56).
- 634.11-2.19: 546.27—DeLong, W. A.** Calcium and boron contents of the apple fruit as related to the incidence of blotchy cork. *Plant Physiol.* 12, 1937 (553-556).
- 634.11-2.19: 546.27—Fruit-Grower.** Plant nutrition and health. Boron treatment for apple diseases. *Fruit-Grower* 83, 1937 (231-232).
- 634.11-2.19: 546.27—Johnson, J. C.; DeLong, W. A.** Boron content of apples at different stages of development. *Plant Physiol.* 12, 1937 (219-220).

## BIBLIOGRAPHY OF SOIL SCIENCE

- 634.11-2.19:546.27**—Savage, C. G. Internal cork of apples. Soil dressings of borax give excellent results. *Agric. Gaz. N.S.W.* 48, 1937 (387-390).
- 634.11-2.19:546.27**—Woodbridge, C. G. The boron content of apple tissues as related to drought spot and corky core. *Sci. Agric.* 18, 1937 (41-48).
- 634.11-2.19-1.432.4**—Askew, H. O.; Chittenden, E.; Stanton, D. J. "Internal cork" of apples, Nelson, New Zealand. *N.Z. J. Sci. Tech.* 17, 1936 (595-599).
- 634.11-2.19-1.811.4**—Thomas, L. A. Calcium deficiency in apple trees at Stanhope (Q.) *Aust. J. Coun. Sci. Indust. Res.* 9, 1936 (235-236).
- 634.11-2.19-1.83**—Warne, L. G. G. Observations on the effect of potash supply on the water relations of apple trees. *J. Pomol.* 15, 1937 (49-55).
- 634.11-2.4-1.81**—Baker, K. F.; Heald, F. D. Effect of certain cultural and handling practices on the resistance of apples to Penicillium expansum. *Phytopath.* 26, 1936 (932-948). *B.C.A.* 56 (1102).
- 634.11-2.4-1.81**—Moore, M. H. Some observations on the influence of manurial dressings and of certain other factors on the incidence of scab (*Venturia inaequalis* (Cooke) Wint.) and of spray-injury in apples. *J. Pomol.* 14, 1936 (77-96).
- 634.13-1.432.2**—Work, R. A. Soil moisture requirements of pear trees. *Oreg. St. Hort. Soc. Ann. Rept.* 26, 1934 (25-29). *E.S.R.* 13 (319).
- 634.13-1.432.2**—Aldrich, W. W.; Work, R. A. Effect of leaf-fruit ratio and available soil moisture in heavy clay soil upon amount of bloom of pear trees. *Proc. Amer. Soc. Hort. Sci.* 31, 1935 (57-74). *Hort. Abs.* 5 (69).
- 634.13-1.432.2**—Lewis, M. R.; Work, R. A.; Aldrich, W. W. Influence of different quantities of moisture in a heavy soil on rate of growth of pears. *Plant Physiol.* 10, 1935 (309-323). *Hort. Abs.* 5 (137).
- 634.13-1.432.2**—Work, R. A. Pear production increased by maintaining adequate soil moisture. *U.S.D.A. Yrbk.* 1935 (273-275). *E.S.R.* 74 (41).
- 634.13-1.432.2**—Work, R. A.; Lewis, M. R. The relation of soil moisture to pear tree wilting in a heavy clay soil. *J. Amer. Soc. Agron.* 28, 1936 (124-134).
- 634.13-1.432.2**—Rogers, W. S.; Srivastava, D. N. Soil moisture studies. II. Moisture variation in a pear orchard. *E. Malling Res. Sta. 24th Ann. Rept.* 1937 (110-113).
- 634.13-1.432.2:581.144.2**—Aldrich, W. W.; Work, R. A.; Lewis, M. R. Pear root concentration in relation to soil moisture extraction in heavy clay soil. *J. Agric. Res.* 50, 1935 (975-988).
- 634.13-1.58**—Howlett, F. S. Soil management systems in a young Bartlett pear orchard. *Ohio Agric. Expt. Sta. Bull.* 578, 1936, pp. 38.
- 634.13-1.67**—Lewis, M. R.; Work, R. A.; Aldrich, W. W. Studies of the irrigation of pear orchards on heavy soil near Medford, Oreg. *U.S.D.A. Tech. Bull.* 432, 1934, pp. 34. *E.S.R.* 72 (480).
- 631.13-1.81**—Proebsting, E. L. Fertilizer trial with Bartlett pears. *Proc. Amer. Soc. Hort. Sci.* 30, 1933 (55-57). *B.C.A.* 54 (422).

## FERTILIZERS AND GENERAL AGRONOMY

- 634.14-1.466.1—Bouwens, H.** Investigations about the mycorrhizas of fruit-trees, especially of quince (*Cydonia vulgaris*) and of strawberry plant (*Fragaria vesca*). *Zbl. Bakt.* 97, 1937 (34-49). [E.]
- 634.2-1.432.2—Chang, W. T.** Relation of soil moisture conditions to the growth of some *Prunus* species. *Nat. Univ. Chekiang, Res. Pap.* June 1934, pp. 18. *Hort. Abs.* 5 (208).
- 634.21-1.453—Stephens, C. G.** A salt-affected apricot orchard at Tea Tree. *Tasmanian J. Agric.* 5, 1934 (202-203). B.C.A. 54 (1011).
- 634.21-1.821.1—Rubin, S.** Experiment with liming gooseberries and apricots. *Khim. Sotsial. Zemled.* No. 2, 1934 (34). Z.P.D. 42 (103). [K.]
- 634.22-1.5—Pučnik, K.** The cultivation and manuring of plum trees in Yugoslavia. *Ernähr. Pflanze* 33, 1937 (42-45). [G.e.sp.]
- 634.22-1.67—Hendrickson, A. H.; Veihmeyer, F. J.** Irrigation experiments with prunes. *Calif. Agric. Expt. Sta. Bull.* 573, 1934, pp. 44. E.S.R. 71 (777).
- 634.22-1.81—Guseva, E. I.; Kilchevsky, A. L.** The influence of mineral fertilizers on the growth and productiveness of the plum "Italian Vengerka". *Bull. Sochi Zonal Fruit Expt. Sta.* 8, 1934 (103-119). *Hort. Abs.* 6 (17).
- 634.22-1.81—Neoral, K.; Blaha, J.** Certain fundamental relations between manuring, growth and the yield of prune trees. *Sborn. Čsl. Akad. Zeměd.* 10, 1935 (165-174). [Cz.f.]
- 634.22-2.19-1.81—Dippenaar, B. J.** Cause and control of heat spot of plums. *Farm. S. Africa*, 12, 1937 (83-85).
- 634.23-1.81—Becker, J.** The effect of manuring on morello cherries. *Ernähr. Pflanze* 31, 1935 (383-387). *Hort. Abs.* 6 (18).
- 634.23-1.84—Gardner, V. R.** Factors influencing the ripening season of sour cherries. *J. Agric. Res.* 55, 1937 (521-532).
- 634.23-2.14—Sukhenko, S. D.; Goncharov, E. R.** Soil conditions causing the destruction of cherry plantations in the Michurinsk district. *Nauch. Plodovodstvo* No. 3, 1935 (3-24). *Pedology* 1937 (135). [R.]
- 634.23-2.19—Langford, L. R.** Cherry leaf curl and root injury. *Proc. Amer. Soc. Hort. Sci.* 32, 1935 (252-253). *Hort. Abs.* 5 (150).
- 634.23-2.19—Reeves, E. L.** Mottle leaf of cherries. *Proc. Wash. Hort. Assoc.* 31, 1936 (85-89). *Hort. Abs.* 6 (111).
- 634.23-2.19 : 546.47—McWhorter, O. T.** Zinc sulphate treatment for cherries. *Better Fruit* 29, 1934 (4). E.S.R. 72 (499).
- 634.23-2.19 : 546.47—McWhorter, O. T.** Response of sweet cherry trees to zinc sulphate treatment for little leaf at The Dalles. *Oreg. St. Hort. Soc. Ann. Rept.* 1934, 1935 (56-58). *Hort. Abs.* 5 (225).
- 634.25/6-1.5—Philp, G. L.; Davis, L. D.** Peach and nectarine growing in California. *Calif. Agric. Expt. Sta. Ext. Circ.* 98, 1936, pp. 62.
- 634.25 : 581.144.2—Marani, M. et al.** Investigations on the root growth of peaches in winter and whether it should influence planting times. *Riv. Frutticult.* 1, 1937 (3-34). *Hort. Abs.* 7 (13). [I.]
- 634.25-1.432.2—Cullman, F. P.; Weinberger, J. H.** Studies on the influence of soil moisture on growth of fruit and stomatal behaviour of Elberta peaches. *Proc. Amer. Soc. Hort. Sci.* 29, 1933 (28-33). *Biol. Abs.* 9 (409).

# BIBLIOGRAPHY OF SOIL SCIENCE

**634.25-1.432.2—Hendrickson, A. H. ; Veihmeyer, F. J.** Size of peaches as affected by soil moisture. *Proc. Amer. Soc. Hort. Sci.* 32, 1934 (284-285). *Hort. Abs.* 5 (208).

**634.25-1.432.2—Ballenegger, R.** Study of the ecology of a peach orchard. I. The moisture content of a clay soil. *M. Kir. Kertészeti Tanintézet Közleményei Budapest* 2, 1936. P.I.S. 12 (52).

**634.25-1.5—Talbert, T. J.** Missouri peach culture. *Missouri Agric. Expt. Sta. Bull.* 380, 1937, pp. 30.

**634.25-1.81—Murphy, M. M.** The effect of fertilizers on Elberta peach fruits. *Proc. Assoc. S. Agric. Workers*, 34th, 35th, 36th Ann. Conv. 1933-35 (562-563). C.A. 30 (2683).

**634.25-1.81—Stuckey, H. P. ; Armstrong, W. D. ; Cochran, H. L.** Peach fertilizer. *Amer. Fert.* 83, Oct. 19, 1935 (24, 26). J.H.B. 4 (439).

**634.25-1.83—Chandler, R. F.** A study of the effect of various potassium carrying fertilizers upon the growth and yield of apples and peaches. *Proc. Amer. Soc. Hort. Sci.* 30, 1933 (67-69). E.S.R. 72 (185).

**634.25-1.84—Weinberger, J. H. ; Cullinan, F. P.** Nitrogen intake and growth response in peach trees following fall and spring fertilizer applications. *Proc. Amer. Soc. Hort. Sci.* 32, 1934 (65-69). C.A. 29 (7557).

**634.25-1.84—Armstrong, W. D. ; Stuckey, H. P. ; Cochran, H. L.** Nitrogen fertilizer studies with the Elberta peach. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (268).

**634.25-1.84—McCue, C. A.** Relative effects upon peach production of nitrogen derived from certain fertilizer sources. *Trans. Peninsula Hort. Soc.* 1935 ; *Bull. St. Bd. Agric. Del.* 25, No. 5, 1936 (10-12). C.A. 30 (5347).

**634.25-1.84—Rawl, E. H.** Peach tree abnormalities developing from applications of nitrogen fertilizers alone. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (293-298). *Hort. Abs.* 6 (249).

**634.25-2.19—Weinberger, J. H.** Diagnosing the lack of fertilizer elements for orchard trees. *Proc. 39th Ann. Meetg. Md. State Hort. Soc.* 1937 (3-7). C.A. 31 (7174).

**634.25-2.19-1.81—Shaw, C. W.** Report of a fertility survey of Niagara Peninsular peach soils. *Vineland Hort. Expt. Sta. Ontario Pub.* (undated), pp. 4. *Hort. Abs.* 7 (213).

**634.25-2.191—Isaac, W. E.** Researches on the chlorosis of deciduous fruit trees. I. Preliminary. II. Experiments on chlorosis of peach trees. *Trans. Roy. Soc. S. Africa*, 22, 1934 (171-186). *Hort. Abs.* 5 (226).

**634.25-2.191 : 546.72—Joessel, P. H. ; Lidoyne, A.** Experiments on the control of peach chlorosis. *C.R. Acad. Agric.* 22, 1936 (306-311). [F.]

**634.25-2.191-1.416—Morgan, M. F. ; Jacobson, H. G. M.** Soil factors in relation to commercial peach production in Connecticut. *Amer. Soil Surv. Bull.* 16, 1935 (49-53).

**634.25-2.191-1.416—Thérond.** Study of the chemical causes of the chlorosis of peaches in the Rhône valley. *Bull. Assoc. Franç. Ét. Sol* 1, 1935 (62-66). [F.]

**634.3-1.4—Thomason, H. L.** Factors for consideration in citrus plantings and in citrus production. *Citrus Leaves* 15, No. 4, 1935 (5-6, 18-19).

## FERTILIZERS AND GENERAL AGRONOMY

- 634.3-1.411.1: 581.144.2—Oppenheimer, H. R.** A citrus root stock trial on light soil. *Hadar* 9, 1936 (135-40).
- 634.3-1.415.3—Alekseev, V. P.** Citrus trees and the control of saline soils in the Atrec region. *Soviet Subtrop.* No. 7, 1937 (28-34). [R.e.]
- 634.3-1.415.3-1.813—McGeorge, W. T.** Acidulated fertilizers for alkaline soils. *Calif. Citrog.* 21, 1936 (368, 384). *Hort. Abs.* 6 (297).
- 634.3-1.417—Barnette, R. M.** The importance of soil organic matter. *Citrus Indust.* 16, No. 6, 1935 (18).
- 634.3-1.432.2—West, E. S.; Barnard, C.** The alternation of heavy and light crops in the Valencia late orange. *Aust. J. Coun. Sci. Indust. Res.* 8, 1935 (93-100).
- 634.3-1.436—Haas, A. R. C.** Growth and water losses in citrus as affected by soil temperature. *Calif. Citrog.* 21, 1936 (467-479). E.S.R. 77 (489).
- 634.3-1.436—Halma, F. F.** Effect of soil temperature on growth of citrus. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (67-69). *Hort. Abs.* 6 (294).
- 634.3-1.459—Reddick, H. E.** Erosion and the citrus grower. *Calif. Citrog.* 20, 1935 (235, 258-259).
- 634.3-1.466.1—Rayner, M. C.** Mycorrhizal habit of the genus citrus. *Nature* 136, 1935 (516-517). R.A.M. 15 (90).
- 634.3-1.466.1—Reed, H. S.; Freemont, T.** Factors that influence the formation and development of mycorrhizal associations in citrus roots. *Phytopath.* 25, 1935 (645-647). *Hort. Abs.* 5 (165).
- 634.3-1.466.1—Muller, H. R. A.** Citrus mycorrhiza. *Landbouw* 12, 1936 (1-10). *Hort. Abs.* 6 (296).
- 634.3-1.5—Brown, T. W.** The propagation and cultivation of citrus trees in Egypt. *Egypt. Min. Agric. Bull.* 44, 1936, pp. 96.
- 634.3-1.5—Kamerman, P.** Soil problems in relation to S. African citriculture. *Farm. S. Africa* 9, 1936 (273-274).
- 634.3-1.5—Parsons, T. H.** The cultivation of citrus with further suggestions for its improvement. *Trop. Agricut.* 87, 1936 (133-156).
- 634.3-1.584—De Busk, E. E.** Management of citrus during rainy season. *Citrus Indust.* 16, No. 7, 1935 (8, 25).
- 634.3-1.584—Barnette, R. M.** The value of summer cover crops. *Citrus Indust.* 17, No. 7, 1936 (5, 20). E.S.R. 76 (757).
- 634.3-1.613—Ilashenko, K.** Rational utilization of citrus-planting areas. *Soviet Subtrop.* No. 7, 1937 (7-15). [R.]
- 634.3-1.67—Allwright, W. J.** Irrigation trials. *Citrus Grower* 40, 1935 (24-39). *Hort. Abs.* 5 (167).
- 634.3-1.67—Rounds, M. B.** Irrigating citrus orchards. *Calif. Citrog.* 20, 1935 (275, 291). *Hort. Abs.* 5 (168).
- 634.3-1.67—Allwright, W. J.** Irrigation practice in citrus orchards. *Citrus Grower* 47, 1936 (1-9). *Hort. Abs.* 7 (153).
- 634.3-1.67—Barnard, C.** Citrus decline in Murrumbidgee irrigation areas. *Aust. J. Coun. Sci. Indust. Res.* 9, 1936 (163-170).
- 634.3-1.67—Agricultural Supplement to the Palestine Gazette.** Determining the date of irrigation by fruit measurements. *Agric. Suppl.* No. 21, *Palestine Gaz.* No. 719, 1937 (168-170).



## BIBLIOGRAPHY OF SOIL SCIENCE

- 634.3-1.67—Esselen, D. J.** Citrus irrigation practices, with special reference to soil moisture studies in two orchards in the Eastern Transvaal. *S. Africa Dept. Agric. Sci. Bull.* 159, 1937, pp. 57.
- 634.3-1.67—Taylor, C. A.; Furr, J. R.** Use of soil-moisture and fruit-growth records for checking irrigation practices in citrus orchards. *U.S.D.A. Circ.* 426, 1937, pp. 23.
- 634.3-1.671—Reifenberg, A.** Irrigation water and cultivation of citrus. *Hadar* 8, 1935, pp. 8.
- 634.3-1.671—Kelley, W. P.** Suitability of Colorado River water for citrus in South Coastal Basin. *Calif. Citrog.* 22, 1937 (235, 272-273). *C.A.* 31 (7166).
- 634.3-1.81—Holland, F. L.** Citrus fertilizers and lime. *Citrus Indust.* 15, No. 10, 1934 (6-7). *Hort. Abs.* 5 (35).
- 634.3-1.81—Skinner, J. J.; Bahrt, G. M.; Hughes, A. E.** Influence of fertilizers and soil amendments on citrus trees, fruit production and quality of fruit. *Proc. Fla. Hort. Soc.* 1934 (9-17). *C.A.* 29 (2642).
- 634.3-1.81—Queensland Agricultural Journal.** Fertilizing experiments with citrus fruits. *Queensland Agric. J.* 43, 1935 (368).
- 634.3-1.81—Allwright, W. J.** Progress report on the fertilizer trials at Rustenburg, Western Transvaal. *Citrus Grower* 45, 1936 (3-7). *Hort. Abs.* 7 (155).
- 634.3-1.81—Anderssen, F.** The citrus industry. *Farm. S. Africa* 11, 1936 (35-36).
- 634.3-1.81—Millad, Y.** Manuring of citrus trees. *Egypt. Hort. Sect. Leaflet* 48, 1936, pp. 4. *Hort. Abs.* 7 (247).
- 634.3-1.81—Ruprecht, R. W.** Summer citrus fertilization. *Citrus Indust.* 17, No. 2, 1936 (10). *E.S.R.* 76 (759).
- 634.3-1.81 : 581.192—Haas, A. R. C.** Phosphorus content of citrus and factors affecting it. *Soil Sci.* 41, 1936 (239-256).
- 634.3-1.811.3—Haas, A. R. C.** The growth of citrus in relation to potassium. *Calif. Citrog.* 22, 1936 (6, 17, 54, 62).
- 634.3-1.811.91—Shepherd, J. D.; Goldschmidt, M. J.; Oppenheim, J. D.** Report on duty of water investigations on citrus cultivation at Gan Moshe, near Rishon le Tsiyon during the years 1931-32-33. *Palestine Dept. of Development* 1936, pp. 28.
- 634.3-1.816.2—DeBusk, E. E.** Suggestions on summer fertilization in relation to quality of citrus. *Citrus Indust.* 16, No. 7 (18).
- 634.3-1.821.1—Singleton, G.** Importance of calcium in citrus culture. *Proc. Fla. Hort. Soc.* 1931 (7-10). *B.C.A.* 54 (117).
- 634.3-1.821.1—Oppenheimer, H. R.** Problems of citrus nutrition. *Hadar* 7, 1934 (268-271); 8, 1934 (14-17). *Hort. Abs.* 5 (93).
- 634.3-1.828—Hughes, A. E.** A device for measuring the ability of citrus fruits to withstand pressure. *Proc. Fla. Hort. Soc.* 1934 (27-30). *C.A.* 29 (2646).
- 634.3-1.828—Bahrt, G. M.; Hughes, A. E.** Recent developments in citrus soil fertility investigations. *Proc. Fla. Hort. Soc.* 1935 (31-37). *C.A.* 30 (3144).
- 634.3-1.83—Haas, A. R. C.** Potassium in citrus leaves and fruits. *Calif. Citrog.* 22, 1937 (154, 156).

## FERTILIZERS AND GENERAL AGRONOMY

**634.3-1.84—Babcock, W. G.** Economic program for maintaining adequate nitrogen for citrus. *Calif. Citrog.* 20, 1935 (212-220). *Hort. Abs.* 5 (94).

**634.3-1.84—Brichet, J.** The rational nitrogenous manuring of citrus. *Rev. Bot. Appl.* 16, 1936 (66-69).

**634.3-1.84—Haas, A. R. C.** Nitrogen fertilization and root aeration. *Calif. Citrog.* 22, 1937 (286, 332). *Hort. Abs.* 7 (155).

**634.3-1.874—Benton, R. J.; Bryden, J. D.** A gypsum and green manuring trial with citrus. *Agric. Gaz. N.S.W.* 46, 1935 (7). *Hort. Abs.* 5 (35).

**634.3-1.874 : 633.33—Schultz, E. F.** The cowpea for green manure or in rotation with other crop plants. *Estac. Expt. Agric. Tucuman Circ.* No. 51, 1936, pp. 5. *Herb. Abs.* 7 (22).

**634.3-2.19—Reichert, L.; Perlberger, J.** Xyloporosis. The new citrus disease. *Hadar* 7, 1934, pp. 50.

**634.3-2.19—McGeorge, W. T.** Some aspects of citrus decline in Arizona. *Calif. Citrog.* 20, 1935 (214-216). *Hort. Abs.* 5 (94).

**634.3-2.19—Haas, A. R. C.** Deficiency chlorosis in citrus. *Soil Sci.* 42, 1936 (435-438).

**634.3-2.19—Puffeles, M.** Chlorosis in citrus trees. *Trans. from Hassadeh* 15, 1936, pp. 6. [Typescript]

**634.3-2.19 : 546.27—Haas, A. R. C.** Boron-deficiency effects similar in general appearance to bark symptoms of psorosis in citrus. *Soil Sci.* 43, 1937 (317-320).

**634.3-2.19 : 546.47—Camp, A. F.** Zinc sulfate as a soil amendment in citrus groves. *Proc. Fla. Hort. Soc.* 1934 (33-38). *Citrus Indust.* 15, 1934, No. 10, 16 and 18. *Hort. Abs.* 5 (36). C.A. 29 (2642).

**634.3-2.19 : 546.47—Johnston, J. C.** Mottle leaf control. *Calif. Citrog.* 19, 1934 (148, 159). B.C.A. 53 (1076).

**634.3-2.19 : 546.47—Kelley, W. P.** Some erroneous ideas concerning mottle leaf. *Calif. Citrog.* 20, 1935 (234).

**634.3-2.19 : 546.47—Matthews, I.** The zinc sulphate treatment for mottle leaf of citrus trees in the Sundays River Valley. *Citrus Grower* 41, 1935 (30-32). *Hort. Abs.* 5 (446).

**634.3-2.19 : 546.47—Parker, E. R.** Experiments on the treatment of mottle-leaf of citrus trees. *Proc. Amer. Soc. Hort. Sci.* 31, 1935 (98-107). *Hort. Abs.* 5 (96).

**634.3-2.19 : 546.47—Parker, E. R.** Experiments on mottle leaf by spraying with zinc compounds. *Calif. Citrog.* 20, 1935 (90, 106-107).

**634.3-2.19 : 546.47—Thomason, H. L.** Zinc compounds for mottle leaf. *Citrus Leaves*, 15, No. 1, 1935 (4).

**634.3-2.19 : 546.47—Camp, A. F.; Reuther, W.** Progress in zinc studies. *Citrus Indust.* 17, No. 3, 1936 (12, 14). E.S.R. 76 (817).

**634.3-2.19 : 546.47—Camp, A. F.; Reuther, W.** The yellowing of citrus leaves. *Citrus Indust.* 17, 1936 (8-9, 22). C.A. 30 (4970).

**634.3-2.19 : 546.47—Fernando, M.** Mottle leaf of citrus: its incidence and control. *Trop. Agricul.* 86, 1936 (332-334).

**634.3-2.19 : 546.47—Haas, A. R. C.** Zinc relation in mottle-leaf of citrus. *Bot. Gaz.* 98, 1936 (85-86).

**634.3-2.19 : 546.47—Matthews, I.; Powell, H. C.** Spraying citrus trees with zinc sulphate. *Citrus Grower* 44, 1936 (20-21). *Hort. Abs.* 7 (156).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 634.3-2.19:546.47—Parker, E. R. Experiments on the treatment of mottle-leaf of citrus trees. II. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (82-86). R.A.M. 15 (714).
- 634.3-2.19:546.47—Powell, H. C.; Matthews, I. The use of zinc sulphate in controlling mottle leaf of citrus trees. *Univ. Pretoria Ser.* 1, 35, 1936, pp. 14.
- 634.3-2.19:546.47—Bouheller, R. Chloroses of the Aurantiaceae: foliocollosis and deficiency diseases. *Fruits Primeurs* 7, 1937 (143-146). R.A.M. 16 (805).
- 634.3-2.19:546.47—Chapman, H. D.; Vanselow, A. P. The production of citrus mottle-leaf in controlled nutrient cultures. *J. Agric. Res.* 55, 1937 (365-379).
- 634.3-2.19:546.47—Reed, H. S.; Parker, E. R. Effects of zinc on growth. *Calif. Citrog.* 22, 1937 (411-412).
- 634.3-2.19:546.47—Strickland, A. G. Mottle-leaf of citrus—preliminary note on correction in South Australia with zinc sprays. *J. Jamaica Agric. Soc.* 41, 1937 (290-293).
- 634.3-2.19:546.47—Strickland, A. G. Mottle-leaf of citrus—preliminary note on correction in South Australia with zinc sprays. *J. Dept. Agric. S. Aust.* 40, 1937 (579-585).
- 634.3-2.19:546.56—Haas, A. R. C.; Quayle, H. J. Copper content of citrus and fruit in relation to exanthema and fumigation injury. *Hilgardia* 9, 1935 (143-177). *Hort. Abs.* 5 (170).
- 634.3-2.19:546.56—Simmonds, J. H. Citrus diseases. *Queensland Agric. J.* 47, 1937 (142-153). *Hort. Abs.* 7 (157).
- 634.3-2.19:546.72—Finch, A. H.; Albert, D. W.; Kinnison, A. F. Progress on the control of citrus chlorosis or decline. *Proc. Amer. Soc. Hort. Sci.* 31, 1934 (20-23). E.S.R. 75 (652).
- 634.3-2.19-1.415.1—McGeorge, W. T. Some aspects of citrus tree decline as revealed by soil and plant studies. *Ariz. Agric. Expt. Sta. Tech. Bull.* 60, 1936 (329-370). C.A. 30 (6112).
- 634.3-2.19-1.416—Bahrt, G. M. Soil fertility and bronzing of citrus. *Proc. Fla. Hort. Soc.* 1934 (18-20). C.A. 29 (2647).
- 634.3-2.19-1.432.2—Rhoads, A. S. Blight—a non-parasitic disease of citrus trees. *Fla. Agric. Expt. Sta. Bull.* 296, 1936, pp. 44.
- 634.3-2.19-1.671—Reifenberg, A. Irrigation water and cultivation of citrus. *Hadar* 8, 1935 (231-233).
- 634.3-2.19-1.671—Reifenberg, A. Irrigation damages in citrus plantations. *Hadar* 8, 1935 (321-324).
- 634.3-2.19-1.671—Penman, F.; Provan, J. L. Defoliation of citrus. *J. Dept. Agric. Victoria* 1936, pp. 8.
- 634.3-2.19-1.811.2—Haas, A. R. C. Phosphorus deficiency in citrus. *Soil Sci.* 42, 1936 (93-105).
- 634.3-2.19-1.824—Bryan, O. C. The use of magnesium and magnesium lime in controlling bronzing of citrus. *Citrus Indust.* 17, No. 12, 1936 (13). C.A. 31 (799).
- 634.3-2.19-1.824—Tait, W. L. Field tests with magnesium sources. *Citrus Indust.* 17, No. 8-9, 1936 (11-14).
- 634.3-2.19-2.2—Strickland, A. G. Mottle leaf in citrus. *J. Dept. Agric. S. Aust.* 40, 1936 (45-53). *Hort. Abs.* 7 (157).
- 634.31-1.4—Roseau, H. Water relations of soils for oranges and the technique of irrigation. *Bull. Syndicat Algérien Agrumes* 6, 1936, pp. 53. *Hort. Abs.* 7 (245).

## FERTILIZERS AND GENERAL AGRONOMY

- 634.31-1.5**—Brichet, J. The formation of a new orange grove. *Bull. Syndicat Algérien Agrumes* 4, 1936, pp. 34. *Hort. Abs.* 7 (243).
- 634.31-1.67**—Demolon, A. Orange soils, irrigation technique. *C.R. Acad. Agric.* 22, 1936 (978-979). [F.]
- 634.31-1.67**—Syndicat Algérien des Agrumes. Orange soils. Irrigation technique. *Algiers*, 1936, pp. 52. *C.R. Acad. Agric.* 22 (1140). [F.]
- 634.31-1.67**—Khachatourin, S. A.; Tokhadze, I. G. Experimental irrigation of tangerines. *Soviet. Subtrop.* No. 6, 1937 (67-76). [R.]
- 634.31-1.81**—Chevalier, G. The manuring of oranges in Algeria. *Bull. Syndicat. Algérien Agrumes* 5, 1936, pp. 72. *Hort. Abs.* 7 (248).
- 634.31-1.81**—Anderssen, F. G. Citrus manuring—its effect on cropping and on the composition and keeping quality of oranges. *J. Pomol.* 15, 1937 (117-159).
- 634.31-1.81** : 581.192—Haas, A. R. C. Juice of navel oranges in relation to soil fertilization. *Calif. Citrog.* 20, 1935 (160. 172-173). *Hort. Abs.* 5 (95).
- 634.31-1.811.2**—Van der Plank, J. E.; Turner, F. A. S. Are our sour oranges due to lack of phosphorus? *Farm. S. Africa* 11, 1936 (59-60).
- 634.31-1.811.4**—Shionoya, S. Soil investigation in a citrus orchard. The beneficial effect of calcium on the mandarin orange. *J. Sci. Soil Japan* 9, 1935, June Suppl., pp. 25. P.I.S. 10 (191).
- 634.31-1.893.123**—Torres, J. P. A progress report on the effects of nitrophoska fertilizer on old Batangas mandarin orchards. *Philipp. J. Agric.* 7, 1936 (193-204).
- 634.31-2.19** : 546.47—Reed, H. S.; Dufrenoy, J. The effects of zinc and iron salts on the cell structure of mottled orange leaves. *Hilgardia* 9, 1935 (113-141). *Hort. Abs.* 5 (169).
- 634.31-2.19** : 546.47—Reed, H. S.; Parker, E. R. Specific effects of zinc applications on leaves and twigs of orange trees affected with mottle-leaf. *J. Agric. Res.* 53, 1936 (395-398). C.A. 31 (1543).
- 634.31-2.19** : 546.56—Stokes, W. E. The effect of copper sulphate on the yield and quality of oranges. *Proc. Assoc. S. Agric. Workers 34th, 35th and 36th Ann. Conv.* 1933-35 (476-477). C.A. 30 (2682).
- 634.31-2.19** : 546.711—Wickwize, G. C.; Burge, W. E. Further study on "frenching" in orange trees. *Abs. Papers Physiol. Sect. Bot. Soc. Amer.* 1934. *Amer. J. Bot.* 21, 1934 (703-704).
- 634.31-2.19-1.811.6**—Parbery, N. H. Mineral constituents in relation to chlorosis of orange leaves. *Soil Sci.* 39, 1935 (35-45). *Hort. Abs.* 5 (36).
- 634.323-1.81**—Hardy, F.; Rodríguez, G. Grapefruit investigations in Trinidad. *Trop. Agric. Trin.* 12, 1935 (205-215).
- 634.323-1.81**—Williams, R. O. Citrus experiments, St. Augustine experimental station. *Trin. Tob. Dept. Agric. Bull.* 1935, pp. 30.
- 634.323-1.81**—Kinnison, A. F.; Albert, D. W. A progress report on fertilizer studies with grapefruit in the Salt River Valley, Arizona. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (90-91). *Hort. Abs.* 6 (298).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 634.323-1.81:581.144.2**—Gregory, E. J. Citrus root studies in Trinidad. A preliminary investigation on grapefruit. *Trop. Agric. Trin.* 12, 1935 (278).
- 634.323-1.811**—Barnette, R. M. Major plant-food elements for citrus. *Proc. Fla. St. Hort. Soc.* 1936 (4-8). C.A. 31 (2729).
- 634.323-2.191**—Jensen, J. H. Chlorosis of citrus in Puerto Rico. *Phytopath.* 27, 1937 (731).
- 634.323-2.191:546.13**—Menchikovskiy, F.; Puffeles, M. The ratio of Ca, Mg, K, Na and the chlorosis of grapefruit trees in the Jordan Valley. *Hadar* 8, 1935, No. 6, pp. 14.
- 634.334-1.416.1:581.192**—Foote, F. J.; McElhiney, J. B. Effect of available nitrogen in soil on sulphate and boron in lemon leaves. *Calif. Citrog.* 22, 1937 (346, 378-379, 380). *Hort. Abs.* 7 (246).
- 634.334-1.432.2**—Taylor, C. A.; Furr, J. R. The effect of decreasing soil moisture supply on size of lemon fruits. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (71-81). *Hort. Abs.* 6 (298).
- 634.334-1.5**—Dallas, W. K. Lemon-culture. *N.Z. J. Agric.* 51, 1935 (275-283).
- 634.334-1.5**—Uphof, J. C. T. Lemon growing. *Tropenpflanzer* 38, 1935 (288-298). *Hort. Abs.* 5 (257). [G.]
- 634.334-1.67**—Furr, J. R.; Taylor, C. A. The apparent growth of lemon fruits as an index of the moisture supply of the tree. *Proc. Amer. Soc. Hort. Sci.* 32, 1935 (70). E.S.R. 76 (799).
- 634.334-1.81**—Dallas, W. K. Lemon manurial experiment at Tauranga. *N.Z. J. Agric.* 51, 1935 (97-101).
- 634.334-1.821.1**—Dallas, W. K. Effect of liming lemon-trees at Tauranga. *N.Z. J. Agric.* 51, 1935 (163-165). *Hort. Abs.* 5 (258).
- 634.334-2-1.83**—Sindoni, A. The influence of potash fertilization on the healing of wounds in lemon fruits. *Bol. Sta. Pat. Veg.* 15 (n.s.), 1935 (490-495). E.S.R. 75 (368).
- 634.334-2-1.83**—Sindoni, A. Effect of potassic manuring on callus formation in wounds on lemon fruits. *Ortofrutticolt. Ital.* 5, 1936 (7-8). *Hort. Abs.* 6 (55). [I.]
- 634.37-2.19:546.56**—Pittman, H. A. Fig leaf mottle. *J. Dept. Agric. W. Aust.* 12, 1935 (196). *Hort. Abs.* 5 (151).
- 634.38-1.5**—Vilhena, M. Organization of a mulberry grove. *Bol. Agric. Zootec. Vet. Minas Geraes* 8, 1935 (7-10). *Hort. Abs.* 6 (14).
- 634.38-2.191**—Puffeles, M. The cause of chlorosis in mulberry trees in the Jordan Valley. *Hassadch* 16, 1936, pp. 6.
- 634.431-1.81**—Mariano, C. O. Effects of fertilizers on the growth and development of young lanzon plants (*Lansium domesticum* Correa). *Philipp. Agricult.* 23, 1934 (613-638). C.A. 29 (2644).
- 634.471-1.4**—Stephens, S. E. Some tropical fruits. 1. The mangosteen. *Queensland Agric. J.* 44, 1935 (346-348). *Hort. Abs.* 6 (68).
- 634.471-1.4**—Gregson, W. The mangosteen in Burma. *Burma Agric. Surv.* No. 23 of 1935, 1936, pp. 15.
- 634.48-1.4**—Stephens, S. E. Some tropical fruits. 7. The five corner. 8. The cucumber tree. *Queensland Agric. J.* 45, 1936 (270-271, 397). *Hort. Abs.* 7 (153).
- 634.5-1.432.2**—Schuster, C. E. Preliminary report of soil moisture conditions in western Oregon nut orchards. *Oreg. St. Hort. Soc. Ann. Rept.* 26, 1934 (41-44). E.S.R. 73 (322).

## FERTILIZERS AND GENERAL AGRONOMY

- 634.5-1.5—Hoare, A. H. ; Hamond, J. B.** Nuts. *Min. Agric. Bull.* 106, 1937, pp. 35.
- 634.521-1.432.2—Finch, A. H. ; Van Horn, C. W.** The moisture relations of pecan leaves. *Science* 83, 1936 (260). *Hort. Abs.* 6 (108).
- 634.521-1.5—Finch, A. H.** Cultural methods for young pecan orchards. *Nat. Pecan Assoc. Proc.* 32, 1933 (56-60). E.S.R. 73 (618).
- 634.521-1.584—Blackmon, G. H.** Results of pecan cover crop experiments. *Nat. Pecan Assoc. Proc.* 32, 1933 (8-11). E.S.R. 73 (618).
- 634.521-1.584—Blackmon, G. H.** Why plant cover-crops in Florida pecan orchards? *Proc. S.-E. Pecan Grow. Assoc.* 28, 1934 (46-55). *Biol. Abs.* 9 (1355).
- 634.521-1.584—Blackmon, G. H. ; Barnette, R. M.** A cover-crop program for Florida pecan orchards. *Fla. Agric. Expt. Sta. Bull.* 297, 1936, pp. 44.
- 634.521-1.81—Fowler, E. D. ; Skinner, J. J. ; Ruprecht, R. W.** Results of ten years' fertilizer experiments with pecans on Blanton fine sand and Bladen fine sandy loam. *Nat. Pecan Assoc. Proc.* 32, 1933 (74-84). E.S.R. 73 (787).
- 634.521-1.81—Blackmon, G. H. ; Ruprecht, R. W.** Fertilizer experiments with pecans. *Fla. Agric. Expt. Sta. Bull.* 270, 1934, pp. 48.
- 634.521-1.81—Blackmon, G. H.** Effects of fertilizers on the yield of pecan trees. *Proc. S.-E. Pecan Grow. Assoc.* 30, 1936 (16-25). E.S.R. 75 (833).
- 634.521-1.841.1—Crane, H. L. ; Dodge, F. N.** Influence of pruning and applications of ammonium sulfate on the growth, pistillate bloom and set of nuts on pecan trees. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (42-45). C.A. 30 (7758).
- 634.521-2.19 : 546.47—Demaree, J. B. ; Fowler, E. D. ; Crane, H. L.** Summary of results of recent experiments to control pecan rosette with zinc sulphate. *Proc. S.-E. Pecan Grow. Assoc.* 28, 1934 (29-37). E.S.R. 72 (649).
- 634.521-2.19 : 546.47—Waite, M. B.** Zinc proves useful in the control of some plant diseases. *U.S.D.A. Yrbk.* 1934 (380-382). E.S.R. 72 (59).
- 634.521-2.19 : 546.47—Alben, A. O. ; Boggs, H. M.** Zinc content of soils in relation to pecan rosette. *Soil Sci.* 41, 1936 (329-332).
- 634.521-2.19 : 546.47—Finch, A. H.** Zinc and other mineral constituents in relation to the rosette disease of pecan trees. *J. Agric. Res.* 52, 1936 (363-376).
- 634.54-1.4—Alvarez, M. Martinez.** Cultivation and commercial importance of hazel nuts (in Spain). *Econ. Ter. Agric. Madrid* 4, 1935 (296-299). *Hort. Abs.* 6 (26).
- 634.55-1.5—Wood, M. N.** Almond culture in California. *Calif. Agric. Ext. Serv. Circ.* 103, 1937, pp. 96.
- 634.55-1.841—Proebsting, E. L.** Field and laboratory studies on the behaviour of  $\text{NH}_4$  fertilizer with special reference to the almond. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (46-50). *Hort. Abs.* 6 (258).
- 634.571-1.5—Stephens, S. E.** The litchi. *Queensland Agric.* 44, 1935 (191-194).

## BIBLIOGRAPHY OF SOIL SCIENCE

- 634.571-1.5**—**Lambourne, J.** The rambutan (*Nephelium lappaceum*) and its propagation. *Malay. Agric. J.* 25, 1937 (11-17). B.I.I. 35 (252).
- 634.573-1.4**—**Stephens, S. E.** Some tropical fruits. II. The cashew nut. *Queensland Agric. J.* 44, 1935 (488-489). *Hort. Abs.* 6 (69).
- 634.58-1.4**—**Ejercito, J. M.** Peanut culture. *Philipp. J. Agric.* 8, 1937 (97-102).
- 634.58-1.5**—**Alabama Agricultural Experiment Station.** Peanuts. *Ala. Agric. Expt. Sta. Leaflet* 5, 1934, pp. 4. E.S.R. 71 (767).
- 634.58-1.5**—**Murray, G. H.** Peanuts as a crop for New Guinea. *N. Guinea Agric. Gaz.* 1, 1935 (3-15).
- 634.58-1.5**—**Stansel, R. H.** Peanut growing in the Gulf Coast prairie of Texas. *Tex. Agric. Expt. Sta. Bull.* 503, 1935, pp. 16.
- 634.58-1.5**—**Chevalier, A.** Monograph on the ground nut. Part II. The groundnut in Senegal. *Rev. Bot. Appl.* 181-182, 1936 (673-872). [F.]
- 634.58-1.5**—**Hartley, H. J.** Groundnuts and their cultivation. *E. Afric. Agric. J.* 1, 1936 (501-511).
- 634.58-1.5**—**Hayes, T. R.** Some aspects of groundnut production. *E. Afric. Agric. J.* 2, 1937 (455-458).
- 634.58-1.5**—**Lebeuf.** Cultivation of the groundnut. *Bull. Inst. Colon. Marseille. Mat. Grasses* 21, 1937 (117-123). B.C.A. 56 (1103).
- 634.58-1.5**—**Rigler, J.** The cultivation of *Arachis hypogaea* L. in Hungary. *Mezőg. Közöny* 10, 1937 (228-241). *Herb. Abs.* 7 (216).
- 634.58-1.67**—**Vivoli, G.** Ground-nuts under irrigation in Tripolitania. *Agric. Libica* 6, 1937 (2-11).
- 634.58-1.81**—**Subbliah, M.** A short note on groundnut manurial experiments on the Irwin Canal farm, Mandya. *J. Mysore Agric. Expt. Un.* 16, 1937 (187-193).
- 634.61-1.4**—**Mason, F. R.** The coconut industry on the Malabar coast of India. *Malay. Agric. J.* 24, 1936 (476-487).
- 634.61-1.421**—**Joachim, A. W. R.** A uniformity trial with coconuts. *Trop. Agricut.* 85, 1935 (198-207).
- 634.61-1.421**—**Pieris, W. V. D.; Salgado, M. L. M.** Experimental error in field experiments with coconuts. *Trop. Agricut.* 89, 1937 (75-85).
- 634.61-1.459: 581.144.2**—**Aldaba, C.** The root development of the coconut palm. *Philipp. J. Agric.* 7, No. 1, 1932. *Ernähr. Pflanze* 33 (184).
- 634.61-1.5**—**Belgrave, W. N. C.** Experiments on the cultivation and manuring of coconuts in Malaya. *Malay Agric. J.* 22, 1934 (511-538).
- 634.61-1.5**—**Dupont, R.** Comparison between methods employed in Ceylon and in the Seychelles in coconut cultivation and copra preparation. *Bull. Inst. Colon. Marseille. Mat. Grasses* 18, 1934 (229-241). *Hort. Abs.* 4 (230).
- 634.61-1.5**—**Patel, J. S.** Report on coconut enquiry in India. *India Imp. Council. Agric. Res.* 1934, pp. 168.
- 634.61-1.584**—**Salgado, M. L. M.** Questionnaire on cover crops and green manures. (In relation to coconut cultivation.) *Trop. Agricut.* 87, 1936 (202-209).

## FERTILIZERS AND GENERAL AGRONOMY

- 634.61-1.67**—Wardlaw, H. H.; Mason, F. R. An account of irrigation and drainage control on an area of dwarf coconuts. *Malay. Agric. J.* 24, 1936 (421-432).
- 634.61-1.81**—Verteuil, J. de. Manurial experiments with coconuts on Perseverance Estate, Couva. *Trop. Agric. Trin.* 11, 1934 (313-315).
- 634.61-1.81**—Valenoba, V. O. An experimental survey of the relative nutritive values to young coconut palm of fertilizers added to tuff soils in pots. *Philipp. Agrist.* 24, 1935 (152-167).
- 634.61-1.81**—Belgrave, W. N. C. Experiments on the cultivation and manuring of coconuts in Malaya. *Malay. Agric. J.* 25, 1937 (179-186).
- 634.61-1.81**—Belgrave, W. N. C.; Lambourne, J. Cultivation and manuring of coconuts in Malaya. *Malay. Agric. J.* 25, 1937 (179-186). B.C.A. 56 (957).
- 634.61-1.81**—Foster, H. E. Manurial experiments on coconuts. *Trop. Agrist.* 89, 1937 (63-67).
- 634.61-2-1.4**—Edwards, W. H. The health of coconuts in Jamaica. *J. Jamaica Agric. Soc.* 38, 1934 (535-547). *Hort. Abs.* 4 (230).
- 634.61-2-1.4**—Pagden, H. T.; Lever, R. J. A. W. Insects of the coconut palm and the present position of the coconut problem in the British Solomon Islands Protectorate. *Brit. Solomon Is. Agric. Gaz.* 3, 1, 1935 (2-22). *Hort. Abs.* 5 (106).
- 634.61-2.19**—Dwyer, R. E. P. The diseases of coconuts (*Cocos nucifera*) in New Guinea. *N. Guinea Agric. Gaz.* 3, 1937 (28-93).
- 634.61-2.4-1.83**—Patel, J. S.; Nayar, A. P. B. Natural and induced resistance to shoot-rot in the coconut. *Proc. Indian Acad. Sci.* 3B, 1936 (432-437).
- 634.62-1.4**—Albert, D. W.; Hilgeman, R. H. Date growing in Arizona. *Ariz. Agric. Expt. Sta. Bull.* 149, 1935 (231-286). C.A. 30 (213).
- 634.62-1.418**—Chevallier, G. A plant toxicity factor in North Africa and in dry climates. *Prog. Agric. Vit.* 103, 1935 (82-85). C.A. 29 (7004).
- 634.62-1.5**—Freeman, H. J. Date culture in Queensland. *Queensland Agric. J.* 45, 1936 (376-396, 487-501). J.H.B. 5 (B235).
- 634.62-2.953**—Bliss, D. E. Soil disinfection as a means of combating decline disease in date palms. *Date Growers Inst. Twelfth Ann. Rept.* 1935, pp. 7. *Hort. Abs.* 6 (143).
- 634.63-1.4**—Bryden, J. D. Olive culture. *Agric. Gaz. N.S.W.* 47, 1936 (108-110).
- 634.63-1.4**—Bull, W. E. The olive industry of Spain. *Econ. Geog.* 12, 1936 (136-154).
- 634.63-1.5**—Amlable. Methods of olive cultivation in Tunisia and the work of the Service of the Ghaba. *Tunisie Agric.* 38, 1937 (71-118). *Hort. Abs.* 7 (187).
- 634.63-1.5**—Carrier, M. C. The olive in Tunisia. *Tunisie Agric.* 38, 1937 (64-70). *Hort. Abs.* 7 (186).
- 634.63-1.81**—Rey, R. Study of mineral fertilizers for unirrigated olive trees in a dry climate. *Bull. Agric. Tunis* 39, 1935 (159-200). B.I.I. 34 (280).



# BIBLIOGRAPHY OF SOIL SCIENCE

- 634.653-1.81—Marsh, R. H.** Fertilizer trials on the Fuerte avocado. A progress report. *Calif. Avocado Assoc. Yrbk.* 1935 (118-119). *Hort. Abs.* 6 (307).
- 634.662-1.5—Thomas, C. C.** The Chinese jujube. *U.S.D.A. Bull.* 1215, 1936, pp. 14.
- 634.7-1.67—Brown, W. S.** Influence of irrigation upon yields, quality and profits of small fruits. *Proc. Oreg. St. Hort. Soc.* 50, 1936 (82-86). *Hort. Abs.* 6 (253).
- 634.7-1.67—Brown, W. S.** Influences of irrigation upon important small fruits. *Oreg. Agric. Expt. Sta. Bull.* 347, 1936, pp. 37.
- 634.7-1.811—Wallace, T.** The nutrition and manuring of soft fruits. *Imp. Bur. Fruit Prod. Tech. Commun.* 6, 1936, pp. 87.
- 634.711-1.4—Diemair, W.** Raspberry control in the Bavarian Forest. *Ztschr. Untersuch. Lebensmitt.* 71, 1936 (69-76). *B.C.A.* 55 (467). [G.]
- 634.711-1.5—Chisholm, J. S.** The raspberry growing industry in Scotland. *Sci. Hort.* 4, 1936 (46-51).
- 634.711-1.544.7—Havis, L.** Results of mulching black raspberries. *Ohio Agric. Expt. Sta. Bmo. Bull.* 184, 1937 (18-20). *C.A.* 31 (6709).
- 634.711-1.81—Stene, A. E.** Fertilization of red raspberries. *Proc. Amer. Soc. Hort. Sci.* 31, 1934 (400). *E.S.R.* 74 (344).
- 634.711-1.81—Stene, A. E.** Fertilizer treatments of red raspberries. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (411-414). *Hort. Abs.* 6 (252).
- 634.711-1.81—Strong, W. J.** Results with fertilizers on the red raspberry. *Sci. Agric.* 16, 1936 (424-439).
- 634.711-1.811—Harris, G. H.; Woods, J. J.** Raspberry nutrition. I. Seasonal variation of plant nutrients in raspberry plantings under different cultural treatments. *Sci. Agric.* 15, 1935 (525-534).
- 634.711-1.811—Woods, J. J.** Availability of nutrients in raspberry plots in relation to winter injury. *Sci. Agric.* 16, 1935 (1-7).
- 634.711-1.811—Harris, G. H.** Raspberry nutrition. II. Causes of raspberry failures in the coastal area of British Columbia. *Sci. Agric.* 16, 1936 (353-357). *Hort. Abs.* 6 (107).
- 634.711-2.19-1.811.7—Harris, G. H.** Raspberry nutrition. III. Are sulphates deficient in B.C. coastal soils? *Sci. Agric.* 17, 1937 (797-712).
- 634.711-2.4-1.811—Berkeley, G. H.** Rootrots of the raspberry. *Canad. J. Res.* 14, 1936 (306-317).
- 634.721-1.544.7—Shoemaker, J. S.** Effect of fertilizer and mulch on yield of red currants. *Ohio. Agric. Expt. Sta. Bmo. Bull.* 173, 1935 (82, 83). *E.S.R.* 73 (480).
- 634.721-2.19-1.83—Jørgensen, C. A.** Leaf scorch of currant bushes. *Tidskr. Planteavl* 37, 1931 (729-742). *Ernähr. Pflanze* 33 (180). [Da.]
- 634.725-1.5—Frost, H. F.** Gooseberry culture. *N.Z.J. Agric.* 53, 1936 (292-296).
- 634.725-1.821.1—Rubin, S.** Experiment with liming gooseberries and apricots. *Khim. Sotsial. Zemled.* No. 2, 1934 (34). *Z.P.D.* 42 (103). [R.]

## FERTILIZERS AND GENERAL AGRONOMY

- 634.73-1.5**—**Johnston, S.** The cultivation of the highbush blueberry. *Mich. Agric. Expt. Sta. Spec. Bull.* 252, 1934, pp. 52. E.S.R. 72 (482).
- 634.73-1.81**—**Chandler, F. B. ; Mason, I. C.** Effects of fertilizer on the native Maine blueberry. *Proc. Amer. Soc. Hort. Sci.* 30, 1934 (297-298). *Biol. Abs.* 11 (172).
- 634.73-1.811**—**Doehlert, C. A. ; Shive, J. W.** Nutrition of blueberry (*Vaccinium corymbosum*, L.) in sand cultures. *Soil Sci.* 41, 1936 (341-350).
- 634.73-1.811.9**—**Shive, J. W.** Blueberry nutrition. *N.J. Agric.* 15, No. 4, 1933. C.A. 29 (1197).
- 634.75-1.415.1-1.81**—**Lineberry, R. A.** Fertilizer and soil reaction of strawberry soils. *J. Elisha Mitchell Sci. Soc.* 50, 1934 (39). C.A. 29 (1564).
- 634.75-1.466.1**—**Bouwens, H.** Investigations about the mycorrhizas of fruit-trees, especially of quince (*Cydonia vulgaris*) and of strawberry plant (*Fragaria vesca*). *Zbl. Bakt.* 97, 1937 (34-49). [F.]
- 634.75-1.5**—**Uphot, J. C. T.** Strawberry growing in the subtropics. *Tropenpflanzer* 37, 1934 (378-385). *Hort. Abs.* 5 (15). [G.]
- 634.75-1.5**—**Colby, A. S.** Strawberry culture in Illinois. *Ill. Agric. Expt. Sta. Circ.* 453, 1936, pp. 52.
- 634.75-1.544.7**—**Loree, R. E.** Summer mulching the strawberry. *Mich. Agric. Expt. Sta. Quart. Bull.* 17, 1934 (74-75). E.S.R. 72 (482).
- 634.75-1.67-1.84**—**Greve, E. W.** Some effects of nitrogen fertilizer and irrigation on the growth and blossoming of the Howard 17 strawberry. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (397-400).
- 634.75-1.81**—**Greve, E. W.** The present status of the fertilizer problem and recent developments in strawberry culture. *Trans. Peninsula Hort. Soc.* 25, 5, 1936 (23-30). *Hort. Abs.* 6 (255).
- 634.75-1.81**—**Haut, I. C. ; Webster, J. E. ; Cochran, G. W.** The influence of commercial fertilizers upon the firmness and chemical composition of strawberries and tomatoes. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (405-410).
- 634.75-1.811.9**—**Hoagland, D. R. ; Snyder, W. C.** Nutrition of strawberry plant under controlled conditions. (a) Effects of deficiencies of boron and certain other elements. *Proc. Amer. Soc. Hort. Sci.* 30, 1933 (288-294).
- 634.75-1.84**—**Lineberry, R. A.** Fertilizing of strawberries. *Comm. Fert.* 1935 (12-15). *Fert. Feed. J.* 21 (476).
- 634.75-1.84**—**Lineberry, R. A. ; Mann, H. B.** Effect of nitrogen fertilizers on strawberry production. *J. Elisha Mitchell Sci. Soc.* 51, 1935 (209-210). C.A. 30 (4606).
- 634.75-1.84**—**Van Meter, R. A.** Effects of late summer and fall applications of nitrogen on fruit production in the strawberry. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (401-404).
- 634.75-1.84**—**Long, J. H. ; Murneek, A. E.** Nitrogen and carbohydrate content of the strawberry plant. Seasonal changes and the effects of fertilizers. *Missouri Agric. Expt. Sta. Res. Bull.* 252, 1937, pp. 52.
- 634.771-1.4**—**Ferrière, J. F. de ; Natier, E.** Banana soils of French Guinea and coffee soils of the Ivory Coast. *Rev. Bot. Appl.* 13, 1933 (30-45). *Bied. Zbl.* 6 (104). [F.]

## BIBLIOGRAPHY OF SOIL SCIENCE

- 634.771-1.4**—**Jack, H. W.** The banana industry in Jamaica. *J. Jamaica Agric. Soc.* 39, 1936 (627-639).
- 634.771-1.81**—**Laparra.** Use of fertilizers for bananas. *Rev. Agric. Guadeloupe* 1934 (142-152). [F.]
- 634.771-1.81**—**Anon.** Manuring of bananas. *Rev. Int. Prod. Colon.* No. 109, 1935 (9). *Hort. Abs.* 5 (106).
- 634.771-1.81**—**Wood, R. C.** A manurial experiment on bananas. *Emp. J. Expt. Agric.* 4, 1936 (365-367).
- 634.771-1.85**—**Blaisemont, L. A. C.** Use of phosphatic fertilizers in the cultivation of sugar cane and bananas. *Cong. Int. Tech. Chim. Indust. Agric. 5th Cong. Holland* 1, 1937 (290). B.C.A. 56 (1956).
- 634.771-1.86**—**Jacques-Félix, H.** Organic manures for banana in West Africa. *Rev. Bot. Appl.* 15, 1935 (506-525). *Hort. Abs.* 6 (70).
- 634.771-2.4-1.44**—**Reinking, O. A.** Soil and Fusarium diseases. *Zbl. Bakt.* 91, 1935 (243-255).
- 634.774-1.5**—**Hanson, A. P.** Pineapples. *J. Jamaica Agric. Soc.* 39, 1935 (641-643).
- 634.774-1.5**—**Bombay.** Cultivation of pineapples. *Bombay Dept. Agric. Leaflet* No. 8 of 1936, pp. 4. B.I.I. 35 (252).
- 634.774-1.544.7**—**Magistad, O. C.; Farden, C. A.; Baldwin, W. A.** Bagasse and paper mulches. *J. Amer. Soc. Agron.* 27, 1935 (813-825).
- 634.774-1.81**—**Revue Internationale des Produits Coloniaux.** Manuring of pineapples in the French West Indies. *Rev. Int. Prod. Colon.* 11, 1936 (15-17). B.I.I. 34 (277).
- 634.774-1.81**—**Olds, G. D. P.** Further experimental work on pineapples. *Malay. Agric. J.* 25, 1937 (38-57).
- 634.774-1.811**—**Follett-Smith, R. R.; Bourne, C. L. C.** The uptake of minerals by pineapple plants at different stages of growth. *Agric. J. Brit. Guiana* 7, 1936 (17-20).
- 634.774-1.84**—**Tam, R. K.; Magistad, O. C.** Relationship between nitrogen fertilization and chlorophyll content in pineapple plants. *Plant Physiol.* 10, 1935 (159-168).
- 634.774-2-1.5**—**Lewcock, H. K.** Pineapple wilt disease and its control. *Queensland Agric. J.* 43, 1935 (9-17). *Hort. Abs.* 5 (109).
- 634.774-2.2:581.144.2**—**Godfrey, G. H.** The pineapple root system as affected by the root-knot nematode. *Phytopath.* 26, 1936 (408-428). *Hort. Abs.* 7 (166).
- 634.774-2.3-1.83**—**Serrano, F. B.** Control of bacterial fruitlet rots of the pineapple in the Philippines. *Philipp. J. Sci.* 57, 1935 (29-62). C.A. 30 (216).
- 634.776-1.5**—**Pope, W. T.** The edible passion fruit in Hawaii. *Hawaii Agric. Expt. Sta. Bull.* 74, 1935, pp. 22.
- 634.776-1.5**—**Whelan, J. W.** The Chinese gooseberry. *N. Z. J. Agric.* 54, 1937 (105-108). B.I.I. 35 (252).

## 634.8 VITICULTURE

- 634.8-1.4**—**Emon, J.** The adaptability of grape root stocks to different soils. *Prog. Agric. Vitic.* 106, 1936 (521-524). [F.]
- 634.8-1.415.1-1.85**—**Möhringer, K.** Further work on the influence of soil reaction and phosphoric acid on the growth of vines. *Ztschr. Pflanz. Düng.* 41, 1935 (25-36). [G.]

## FERTILIZERS AND GENERAL AGRONOMY

- 634.8-1.415.3—Ravkovitch, S.; Bidner, N. The deterioration of grapevines in saline soils. *Emp. J. Expt. Agric.* 5, 1937 (197-203). *Yedsoth.* 3, 1937 (119-121). [E.]
- 634.8-1.427.3—Salacz, L. Examination of vine leaves to determine nutrient deficiency. *Magyar Ampelol. Évkönyve* 9, 1935 (248-253). C.A. 30 (1493).
- 634.8-1.461.51—Niemeyer, L. Investigations on the relation between the occurrence of azotobacter, growth of vines and weed flora in the vine districts of Moselle, Saar and Ruhr. *Zbl. Bakt.* 91, 1935 (406). Z.P.D. 43 (245).
- 634.8-1.5—Woodfin, J. C. Vine culture under glass. *N. Z. J. Agric.* 53, 1936 (156-160, 222-226).
- 634.8-1.67—Castella, F. de. Vineyard irrigation. *J. Dept. Agric. Victoria* 33, 1935 (137-142).
- 634.8-1.67—Hassadeh. Discussion of problems of vineyard irrigation. *Hassadeh* 15, No. 4 (252-253). [Hb.]
- 634.8-1.81—Engels, O. The application of sufficient humus and lime to soils as a foundation for the manuring of vines. *Wein u. Rebe* 16, 1934 (213-222). [G.]
- 634.8-1.81—Dicenty, D. Choosing the proper types of fertilizers on the basis of characteristics of vine soils. *Magyar Ampelol. Évkönyve* 9, 1935 (257-266). C.A. 30 (1493).
- 634.8-1.81—Guyot, E. Climate and the vine. *Landw. Jahrb. Schweiz* 49, 1935 (17-68). [F.g.]
- 634.8-1.81—Ravaz, L. Factors of quality (in wine) and their relation to agricultural practice. *Prog. Agric. Vitic.* 104, 1935 (489-494). *Hort. Abs.* 5 (217).
- 634.8-1.81—Reinecke, V. The cultivation of table grapes in the union of South Africa. *Ernähr. Pflanze* 31, 1935 (313-316). [G.e.]
- 634.8-1.81—Salacz, L.; Kühn, I. Experiments to formulate practical rules of fertilization. *Magyar Ampelol. Évkönyve* 9, 1935 (254-257). C.A. 30 (1493).
- 634.8-1.81—Stene, A. E. Fertilizer treatment of grapes. *Proc. Amer. Soc. Hort. Sci.* 33, 1935 (453-455). B.C.A. 56 (601).
- 634.8-1.81—Vinet, E. Fertilizer and wood development. *Rev. Vitic.* 83, 1935 (277-280). C.A. 30 (3569).
- 634.8-1.81—Gladwin, F. E. A twenty-five-year test of commercial fertilizers for grapes. *N.Y. St. Agric. Expt. Sta. Bull.* 671, 1936, pp. 24.
- 634.8-1.81—Moreau, L.; Vinet, E. The vigour of the vine in its relations with the soil, manuring and certain diseases of grapes. *Ann. Agron.* 6 (n.s.), 1936 (542-558). [F.]
- 634.8-1.81—Wanner, E. Manuring of vineyards from the point of view of wine quality. *ForschDienst.* 2, 1936 (366-372). [G.]
- 634.8-1.81—Vinet, E. Effect on vines of fertilizers deficient in potassium and nitrogen. *C.R. Acad. Agric.* 23, 1937 (774-782). [F.]
- 634.8-1.81—Wetzel, A. The influence of manuring on the German wines of 1934. *Ernähr. Pflanze* 33, 1937 (119-121). [G.e.sp.]
- 634.8-1.81:581.192—Engels, O. The influence of fertilizing vineyards on the quality of the wine. *Wein u. Rebe* 18, 1936 (206-217). C.A. 31 (4043). [G.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- 634.8-1.811—Vinet, E.** Contribution to the study of the nutrition of the vine. The effect of fertilizers on yield and on quality. *C.R. Acad. Agric.* 21, 1935 (30-41). [F.]
- 634.8-1.811—Vinet, E.** The mineral nutrition of the vine. *Bull. Engrais* 10 March, 1935 (113-116). [F.]
- 634.8-1.811—Lagatu, H.; Maume, L.** Qualitative and quantitative variations in the NPK nutrition of the same species of plant in the same soil without fertilizer interference. *Prog. Agric. Vitic.* 105, 1936 (353-356). C.A. 30 (6493). [F.]
- 634.8-1.811:551.58—Lagatu, H.; Maume, L.** To what extent do variations in weather modify physiological relations in, and the quantities of N,  $P_2O_5$  and  $K_2O$  absorbed by, a vine growing under Mediterranean climatic conditions? *C.R. Acad. Agric.* 22, 1936 (363-382). *Prog. Agric. Vitic.* 106, 1936 (89-92, 115-120, 280-284). *Hort. Abs.* 7 (23). [F.]
- 634.8-1.811.2—Lagatu, H.; Maume, L.** Phosphoric acid in the physiological NPK equilibrium in the vine leaf. *C.R. Acad. Agric.* 23, 1937 (96-102). [F.]
- 634.8-1.813—Dicenty, D.; Ebsenspanger, G.** The effects of fertilizers of various physiological character on Hungarian vine soil types. *Magyar Ampelol. Évkönyve* 9, 1935 (240-247). C.A. 30 (1497).
- 634.8-1.821.1—Lagatu, H.; Maume, L.** Vines and calcium additions. *C.R. Acad. Agric.* 22, 1936 (478-494). [F.]
- 634.8-1.828:546.14—Vitte, G.** The effect of potassium bromide in the soil on the bromide content of wine. *Bull. Soc. Pharm. Bordeaux* 75, 1937 (81-82). C.A. 31 (6406).
- 634.8-1.83—Lagatu, H.; Maume, L.** A case of the absolute necessity of potassic fertilizer. *Prog. Agric. Vitic.* 97, 1932 (576-581). *Hort. Abs.* 10 (718).
- 634.8-1.83—Hugues, E.; Bouffard, E.** The influence of potassium fertilizers on the composition and quality of wines. *Prog. Agric. Vitic.* 104, 1935 (36-42). C.A. 29 (7001). [F.]
- 634.8-1.83—Vinet, E.** Vine manuring. Action of fertilizers on shoot growth in relation to its mineral composition and its capacity for production. *C.R. Acad. Agric.* 21, 1935 (911-919). *Hort. Abs.* 6 (25). [F.]
- 634.8-1.83—Vinet, E.** The effect of potassium fertilizers on the general development of the vine. *C.R. Acad. Agric.* 22, 1936 (894-900). [F.]
- 634.8-1.83—Hugues, E.; Bouffard, E.** Potassium fertilizer and wine quality. *Prog. Agric. Vitic.* 107, 1937 (105-107). C.A. 31 (6396).
- 634.8-1.84—Salacz, L.** Fertilization experiments with various nitrogen salts. *Magyar Ampelol. Évkönyve* 9, 1935 (203-222). C.A. 30 (1497).
- 634.8-1.841.5—Salacz, L.** Fertilizer experiments with lime-nitrogen. *Magyar Ampelol. Évkönyve* 9, 1935 (190-203). C.A. 30 (1498).
- 634.8-1.855—Lagatu, H.; Maume, L.** The nutritional influence of superphosphate on the vine. *C.R. Acad. Agric.* 22, 1936 (1018-1031). [F.]
- 634.8-1.855—Lagatu, H.; Maume, L.** Nutritional effect of basi-phosphate on vines. *C.R. Acad. Agric.* 22, 1936 (1132-1137). [F.]

## FERTILIZERS AND GENERAL AGRONOMY

**634.8-1.86—Schrader, T.** Humus manuring in German vineyards. *ForschDienst.* 1, 1936 (831-835). [G.]

**634.8-2.19:546.27—Maier, W.** Boron deficiency symptoms in vine seedlings grown in water cultures. *Gartenbauwiss.* 11, 1936 (1-16). *Hort. Abs.* 7 (121).

**634.8-2.19:546.47—Dufrénoy, J.** Effect of zinc on the growth of the grapevine. *C.R. Soc. Biol.* 118, 1935 (156-158). C.A. 29 (3095).

**634.8-2.19:546.47—Dufrénoy, J.** Zinc and vine growth. *Potasse* 9, 1935 (45-46). [F.]

**634.8-2.19:546.47—Progrès Agriculture Viticole.** The results of a treatment of court-noué. *Prog. Agric. Vitic.* 40, 1935 (328-329). R.A.M. 15 (199).

**634.8-2.19-1.811.3—Herschler, A.** A study of the nutritional disturbances in grape vines due to unfavourable soil conditions with special reference to potash deficiency. *Ernähr. Pflanze* 32, 1936 (197-204). [G.e.]

**634.8-2.191—Casale, L.** Chlorosis of grapevines. *Ricerca Sci. Roma* 2, Nos. 11-12, 1935 (440-443). E.S.R. 76 (647).

**634.8-2.191:546.72—Vidal, J. L.** Control of chlorosis of the vine. *Rev. Vitic.* 85, 1936 (400-403). R.A.M. 16 (366). [F.]

**634.8-2.191-1.81—Kirsanov, A.; Sanikidze, A.; Bakradze, T.** The influence of the nature of soils and fertilizers on the chlorosis of grapevine. *Trans. Dokuchaev Inst.* 14, 1937 (129-165). [R.e.]

**634.8-2.191-1.842.3—Casale, L.** Chlorosis of the vine and possible remedies. *Ital. Agric.* 73, 1936 (82-88). *Hort. Abs.* 6 (261).

**634.8-2.4-1.81—Du Plessis, S. J.** Studies on the wastage of South African export grapes with special reference to that caused by Botrytis cinerea. *S. Afric. Dept. Agric. Sci. Bull.* 151, 1936, pp. 156. R.A.M. 15 (701). [E.Afr.]

**634.8-2.954.8—Masselin, J.** The destruction of perennial weeds in vineyards by means of sodium chlorate. *Prog. Agric. Vitic.* 106, 1936 (397-400). *Hort. Abs.* 7 (38). [F.]

## 634.9 FORESTRY

**634.9:551.58—Zakharov, S. A.** Forest and steppe in the Caucasus. *Pedology* No. 4, 1935 (501-548). [R.e.]

**634.9:551.58—Nicholson, J. W.** The influence of forests on climate and water supply in Kenya. *E. Afric. Agric. J.* 2, 1936 (48-53, 164-170, 226-240).

**634.9:551.58—Pavari, A.** Influence of Mediterranean forests on climate. *Geographia (Firenze)* 2, 6 ser., No. 4, 1936 (475-501). F.S.R. 77 (156).

**634.9:627.51—Silcox, F. A.** Forestry in flood prevention. *Address Conv. Nat. Rivers Harbours Cong.* April 27, 1936, pp. 5. (Mimeo). C.M.R. 12, 1937 (1).

**634.9:627.51—Farrow, R. C.** Snow surveys for forecasting stream flow. *Forestry Chronicle* 13, No. 1, 1937 (271-283). C.M.R. No. 14 (2).

**634.9:633.2/3-1.81—Morath, M.** The influence of recent changes in forest management on game and its relation to the new game laws and agricultural production. *Ernähr. Pflanze* 33, 1936 (7-13). [G.e.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- 634.9-1.4—Tiurin, I. V. Short introduction to the investigation of forest soils. *Silva* 21, 1933 (377). Z.P.D. 37 (372). [G.]
- 634.9-1.4—Krauss, G.; Härtel, F. On forest soil research. *Soil Res.* 4, 1935 (207-216). [G.]
- 634.9-1.4—Tkachenko, M.E. Eliminating metaphysics from forest soil science. *Pedology* No. 4, 1935 (481-492). [R.e.]
- 634.9-1.4—O'Donnell, J. Soil science as a factor in modern forestry practice. *Aust. Forestry* 1, 1936 (61-66). C.M.R. 1936 (1128).
- 634.9-1.4—Abetz, K. Soil valuation and its unification in forestry. *Deut. Forst.* 19, No. 36, 1937 (401-404). C.M.R. 15 (9).
- 634.9-1.4—Coile, T. S. Forest soil problems in the Piedmont Plateau. *J. Forestry* 35, No. 4, 1937 (344-348).
- 634.9-1.4: 539.16—Lagunov, L. L. Radioactivity of the rocks in the Far East and its influence on forests. *Vest. Dal'nev. Fil. Akad. Nauk (U.S.S.R.)*, No. 9, 1934 (105-109). C.A. 29 (3910).
- 634.9-1.4: 550.35—Dobler, P. E. Bioradioactivity and earth rays. *Südendeut. Forst. u. Jagdtg.* 36, No. 5, 1936 (65-67). C.M.R. 1935 (No. 387).
- 634.9-1.4: 550.35—Müller, K. M. New methods for the investigation of the locality (soil) in plant biological problems. *Allg. Forst. u. Jagdtg.* 112, 1936 (113-135). C.M.R. 1936 (No. 279).
- 634.9-1.4: 550.35—Dengler, Earth-radiation in the forest. *Ztschr. Forst- u. Jagdw.* 69, No. 8, 1937 (414-423). C.M.R. 5 (7).
- 634.9-1.4: 551.311.33—Kofodhansen, A. F. The loess soil in its relation to forest vegetation. *Acta Soc. Bot. Polon.* 12, 1935 (234-256).
- 634.9-1.4: 581.144.2—Watt, A. S.; Fraser, G. K. Tree roots and the neld layer. *J. Ecol.* 21, 1933 (404-414).
- 634.9-1.4: 581.144.2—Coster, C. Root studies in the tropics. V. Mountain forest species. *Korte Meded. Boschbouwproefsta. Groningen* 54, 1935, pp. 18. Du.g.]
- 634.9-1.4: 581.5—Hesmer. Forest succession in different soil types. *Ztschr. Forst- u. Jagdw.* 65, 1933 (505-540, 596-606, 631-657). C.M.R. 1936 (No. 589). [G.]
- 634.9-1.4: 581.5—Magyar, P. Studies of forest types of Börzöny and Bükk Mountains. *Forstl. Vers.* 35, 1933 (439). P.I.S. 9 (183). [G.]
- 634.9-1.4: 581.5—Wilde, S. A.; Scholz, H. F. Subdivision of the upper Peninsula experimental forest on the basis of soils and vegetation. *Soil Sci.* 38, 1934 (383-394).
- 634.9-1.4: 581.5—Daubenmire, R. F. The "Big woods" of Minnesota—its structure and relation to climate, fire and soils. *Ecol. Monog.* 6, 1936 (233-268). C.A. 30 (8462).
- 634.9-1.4: 581.5—Kovrygin, S. A. An experiment in the study of the relation between the properties of soil and the forest vegetation. *Pedology* No. 4, 1937 (535-558). [R.e.]
- 634.9-1.4: 2.187—Heyward, F. Soil changes associated with forest fires in the long leaf pine region of the south. *Amer. Soil Surv. Bull.* 17, 1936 (41-42).
- 634.9-1.411.1—Glukhov, N. M. The physical properties of sandy forest soils in relation to different methods of cultivation. *Izv. Povolzh. Lesotekhn. Inst.* 1934 (47-86). *Pedology* 1935 (923). [R.]

## FERTILIZERS AND GENERAL AGRONOMY

634.9-1.411.1—Albert, R. Pumice sand as a forest soil and soil type. *Forstarchiv* 11, 1935 (129-133). Z.P.D. 42 (118). C.A. 29 (6989).

634.9-1.411.1—Yakubov, T. F. The effect of trees on soil formation in sands. *Khim. Sotsial. Zemled.* No. 4, 1937 (41-50). [R.]

634.9-1.411.3—Donahue, R. L. Physical and chemical studies of two contrasting clay forest soils. *J. Forestry* 35, 1937 (16-23).

634.9-1.413.4—Chandler, R. F. A study of certain calcium relationships and base exchange properties of forest soils. *J. Forestry* 35, 1937 (27-32).

634.9-1.415.1:581.5—Wilde, S. A. Soil reaction in relation to forestry and its determination by simple tests. *J. Forestry* 32, 1934 (411-418). B.C.A. 54 (371).

634.9-1.415.1:581.5—Smolik, L. Exposure and active reaction of forest soils. *Sborn. Čsl. Akad. Zeměd.* 10, 1935 (207-211).

634.9-1.415.1:581.5—Braun, E. L. Forests of the Illinoian till plain of south-western Ohio. *Ecol. Monog.* 6, 1936 (89-149). C.A. 30 (4604).

634.9-1.416—Powers, W. L.; Bollen, W. B. The chemical and biological nature of certain forest soils. *Soil Sci.* 40, 1935 (320-327).

634.9-1.416—Fehér, D.; Frank, M. Investigations on the periodic cycle of nitrogen, phosphorus and potash in forest soil. *Ztschr. Pflanz. Düng.* 43, 1936 (5-33). [G.]

634.9-1.416:551.58—Lang, R. Does a good forest habitat require a soil rich in nutrients? *Allg. Forst. u. Jagd-Ztg.* 110, 1934 (73). P.I.S. 9 (184).

634.9-1.416:551.58—Tschermak, L. Climate and the distribution of tree species in the East Alps. *Bioklim. Beibl. Met. Ztschr.* 2, 1935 (153-160). *ForschDienst.* 1 (318). [G.]

634.9-1.416.1—Schairer, E. A contribution to the nitrogen problem. *Silva* 25, 1937 (181-186). C.M.R. 17 (13).

634.9-1.417.2—Wittich. Investigation in north-west Germany on the influence of tree species on the biological condition of the soil. *Mitt. Forstwirtsch. Forstwiss.* 4, 1933 (115-158). *Bied. Zbl.* 6 (100). [G.]

634.9-1.417.2—Grosskopf, W. The composition and morphology of forms of humus unsuitable for forestry. *Tharandt. Jahrb.* 86, 1935 (48). P.I.S. 10 (192).

634.9-1.417.2—Mattson, S.; Ekman, P. The reaction and the buffer capacity of soil organic matter. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (374-377).

634.9-1.417.2—Romell, L. G. Ecological problems of the humus layer in the forest. *Cornell Agric. Expt. Sta. Mem.* 170, 1935, pp. 22.

634.9-1.417.2—Romell, L. G. An example of myriapods as mull formers. *Ecology* 16, 1935 (67-71).

634.9-1.417.2—Shewan, J. M. On the chemical composition of the organic matter in forest soils. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (377-378).

634.9-1.417.2—Werth, E. The deterioration of forest soils through formation of raw humus. *NachrBl. Deut. PflSchDienst.* 16, No. 4, 1936 (37-38). C.M.R. 1936 (No. 316).



# BIBLIOGRAPHY OF SOIL SCIENCE

**634.9-1.417.2—Hesselman, H.** The dependence of the humus layer on the age and composition of the stand in a northern fir forest of the blueberry *Vaccinium* type, and on the effect of the humus layer on the rejuvenation and growth of the forest. *Medd. Skogsförsöksanst.* No. 30, 1937 (529-715). [Sw. g.]

**634.9-1.417.2—Volger, K.; Werth, E.** Forest soil sickness due to humus formation. *Forstarchiv* 13, 1937 (43-46, 46-47). C.A.39 (3618). B.C.A. 56 (705). [G.]

**634.9-1.417.2 (083.72)—Bornebusch, C. H.; Heiberg, S. O.** Definitions of forest humus types submitted. *Amer. Soil Surv. Bull.* 17, 1936 (95).

**634.9-1.417.2 (083.72)—Lunt, H. A.** Definitions of forest humus types. *Amer. Soil Surv. Bull.* 17, 1936 (43-44).

**634.9-1.417.2 (083.72)—Heiberg, S. O.** Nomenclature of forest humus layers. *J. Forestry* 35, 1937 (36-39).

**634.9-1.42—Hartmann, F. K.** The use of soil investigations for forestry practice. *Mitt. Forstwart. Forstwiss.* 1936 (243-270). [G.]

**634.9-1.423—Kleinschmidt, R.; Deines, G.** Methods of investigating forest soils derived from acid humus decomposition. *Mitt. Forstwart. Forstwiss.* 4, 1933 (159-182). *Bied. Zbl.* 6 (302).

**634.9-1.423—Hartmann, F. K.** Laboratory soil investigations and their use. *Mitt. Forstwart. Forstwiss.* 7, 1936 (271-286). [G.]

**634.9-1.43—Süchting, H.; Volkert, E.** The determination of physical stratification and some soil properties dependent on it. *Mitt. Forstwart. Forstwiss.* 5, 1934 (309-332). *Bied. Zbl.* 6 (281).

**634.9-1.432—Puksmann, E.** Variations in the subterranean water-table of forest soils in the Tartu University Instructional and Experimental Area, 1930-1934. *Mitt. Forstwart. Abt. Univ. Tartu* No. 26, 1936, pp. 125. C.M.R. No. 13 (6). Est.

**634.9-1.432.2—Freise, F. W.** The retention of precipitation in primitive forest. *Forstwiss. Zbl.* 56, 1934 (231-245). C.A. 29 (867). [G.]

**634.9-1.432.2—Lunt, H. A.** Distribution of soil moisture under isolated forest trees. *J. Agric. Res.* 49, 1934 (695-703).

**634.9-1.432.2—Akopov, V.** The dynamics of soil moisture in relation to silviculture. *Pedology* No. 4, 1935 (585-592). R.e.]

**634.9-1.432.2—Fal'kovsky, P. K.** The moisture cycle in the soil under the influence of forests. *Pedology* No. 4, 1935 (561-584). R.e.]

**634.9-1.436—Burger, H.** Forest climate. III. Meteorological observations outdoors, under beech and pine. *Mitt. Schweiz. Zent. Anst. Forstl. Versuchs.* 18, 1933 (1-54). *Biol. Abs.* 9 (1118). [G.]

**634.9-1.436—Ångström, A.** Soil temperature in stands of different densities. *Medd. Skogsförsöksanst.* 29, 1936 (187-218). C.M.R. No. 7 (4).

**634.9-1.436—Herr, L.** Soil temperatures with special reference to external meteorological factors. *Thesis, Leipzig* 1936, pp. 63. [G.]

**634.9-1.436—Strohecker, H. F.** A survey of soil temperatures in the Chicago area. *Ecology* 18, 1937 (162-168).

**634.9-1.44—Heimbürger, C. C.** Forest-type studies in the Adirondack region. *Cornell Agric. Expt. Sta. Mem.* 105, 1934, pp. 122.

## FERTILIZERS AND GENERAL AGRONOMY

**634.9-1.44**—**Diebold, C. H.** Some relationships between soil type and forest site quality. *Ecology* 16, 1935 (640-647).

**634.9-1.44**—**Krauss, G. ; Wobst, W.** Site-factor causes of silvicultural difficulties in the Vogtland schist district. *Tharandt. Jahrb.* 1935 (169-248).

**634.9-1.44**—**Donahue, R. L.** The relation of soil character as expressed by certain soil types to the choice of land for forestry in the cut-over pine lands of Northern Michigan. *Amer. Soil Surv. Bull.* 17, 1936 (79-80).

**634.9-1.44**—**Ganssen, R. H.** The importance of the soil type in forest science and practice. *Ztschr. Forst-u. Jagdw.* 69, 1937 (273-294). C.M.R. 17 (6). [G.]

**634.9-1.44**—**Ganssen, R. H.** The importance of the soil type in the theory and practice of forestry. *Ztschr. Forst u. Jagdw.* 69, 1937 (336-356).

**634.9-1.44-1.46**—**Svinhufvud, V. E.** Researches on the soil-microbiological differences in Cajander's forest types. *Acta Forestalia Fenn.* 44, 1937, pp. 63. C.M.R. 17 (3). [G.]

**634.9-1.445.2**—**Hoon, R. C.** The distribution of sesquioxides, silica and organic matter in forest soil profiles of the Kulu Hill area. *Indian Forest Rec.* 1, (n.s.), 1936 (347-365). C.A. 30 (6485).

**634.9-1.445.2**—**Taylor, F. McK. ; Mahendru, I. D., et al.** A study of the soils in the hill areas of the Kulu forest division, Punjab. 1. An investigation of soil profiles under deodar, spruce, blue pine and chir. *Indian Forest Rec.* 1 (n.s.), 1936 (289-346). C.A. 30 (6865).

**634.9-1.445.7**—**Joachim, A. W. R. ; Pandittesekere, D. G.** Studies on Ceylon soils. VI. Some forest soils of the wet low-country. *Trop. Agrist.* 85, 1935 (146-156).

**634.9-1.445.7**—**Tropical Agriculture.** The soil relationships of tropical rain-forests. *Trop. Agric. Trin.* 12, 1935 (107).

**634.9-1.461**—**Volkert.** Biological activity of forest soils in relation to acidification and buffering: methods for the biological examination of soil. *Mitt. Forstent. Forstwiss.* 4, 1933 (1-32). C.A. 30 (6485). [G.]

**634.9-1.461**—**Fehér, D.** Regional distribution of the bacteria of forest soils. *Math. Naturw. Anz. Ungar. Akad. Wiss.* 52, 1935 (533-585). C.A. 29 (5965).

**634.9-1.461**—**Gilzhitskaia, Z. K.** On the microflora of the Gloscevo forest. *Zh. Inst. Bot. U.A.N.* No. 6, 1935 (107-113). *Pedology* 1936 (926).

**634.9-1.461.1.3**—**Süchting, H. ; Volkert, E.** The detection of decomposition of raw humus in forest soils. *Mitt. Forstent. Forstwiss.* 5, 1934 (296-308). *Bied. Zbl.* 6 (281).

**634.9-1.461.1.3**—**Fehér, D.** Investigations on the nitrogen cycle in forest soils. *Erdész. Kísér.* 36, 1934 (263-268). [G.]

**634.9-1.461.1.3**—**Lunt, H. A.** The application of a modified procedure in nitrogen transformation studies in forest soils. *J. Amer. Soc. Agron.* 27, 1935 (346-355).

**634.9-1.466.1**—**Fehér, D. ; Bessenyei, Z.** Investigations of the fungus flora of forest soils. *Erdész. Kísér.* 35, 1933 (56). *Z.P.D.* 36A (123).

**634.9-1.466.3**—**Fehér, D.** On the algal flora of the forest soil. *Erdész. Lapok* 75, 1936 (101-103). *Silva* 24, No. 13, 1936. C.M.R. 1936 (No. 417).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 634.9-1.471—Veatch, J. O. Soil maps as a basis for mapping original forest cover. *Mich. Acad. Sci. Pap.* 15, 1932 (267-273). *Biol. Abs.* 9 (649).
- 634.9-1.471—Ervin, I. Outlines of forest soil mapping. *Erdész. Lapok* 75, 1936 (290-301). C.M.R. 1936. [H.]
- 634.9-1.471—Fehér, D. The significance of soil mapping in forestry. *Erdész. Kisérlet.* 37, 1935 (235-237). [G.]
- 634.9-1.48—Drouineau, G. Comparison of the evolution of an alluvial soil with and without forest cover. *Bull. Assoc. Franç. Ét. Sol* 1, 1935 (30-32). [F.]
- 634.9-1.483—Smolik, L. Degradation and reformation of Czechoslovakian forest soils. *Lesnická Práce* 15, 1936 (26-31). C.A. 31 (1924). [E.]
- 634.9-1.51—Zemitis, N. Influence of cultivation on water and air content of forest soils. *Latvia Forest Res. Sta. Repts.* 6, 1937. C.M.R. 16 (1). [Lg.]
- 634.9-1.512—Stoeckeler, J. H. Subsoiling increases survival and growth of tree planting in the Great Plains. *Lake States Forest Expt. Sta. Pub.* Jan. 1937, pp. 9. C.M.R. No. 13 (6).
- 634.9-1.544.7—Schulenberg, A. v. d. Plantations with soil coverings of branches. *Forstarchiv* 12, 1936 (94-98). *Biol. Abs.* 11 (175). [G.]
- 634.9-1.58—Nemec, A. The influence of forest agriculture on the physical and chemical properties of soil. *Forstwiss. Cbl.* 57, 1935 (656-666, 701-708). C.A. 30 (1931).
- 634.9-1.58—Nemec, A.; Mařan, B. The influence of cultivation on nitrification of forest soil in the Adamov region in Slovakia. *Sborn. Čsl. Akad. Zeměd.* 11, 1936 (167-175). C.A. 30 (7260). [Cz.g.]
- 634.9-1.582—Fehér, D. Some remarks on the problem of crop rotation, with particular reference to the reversion to forest crops on soils exhausted by agricultural use. *Erdész. Lapok* 75, 1936 (274-289). C.M.R. 1936 (No. 414). [H.]
- 634.9-1.589—Blanford, H. R. Afforestation by Wendlandia of grass slopes. *Indian Forester* 62, 1936 (316-317).
- 634.9-1.589—Charlton, J. A note on the effects of taungya on Burma forest soils. *Agric. Live-Stk. India* 6, 1936 (54-59).
- 634.9-1.61—Topham, P.; Townsend, R. G. R. Forestry and soil conservation in Nyasaland. *Imp. Forestry Inst. Pap.* 5, 1937, pp. 20.
- 634.9-1.67—Goedeckemeyer. Forest irrigation. An experiment. *Ztschr. Forst-u. Jagdw.* 66, 1934 (89-94). *Biol. Abs.* 9 (1119). [G.]
- 634.9-1.67—Osmaston, F. C. The irrigation of dry hill sal areas. *Indian Forester* 63, 1937 (541-547). C.M.R. 18 (7).
- 634.9-1.81—Lang, R. Forest fertilizing. *Forstwiss. Cbl.* 1933 (541). C.A. 29 (5975).
- 634.9-1.81—Süchting, H. Forest manuring investigations. *Mitt. Forstwart. Forstwiss.* 4 1933 (96-114). *Biol. Abs.* 9 (648).
- 634.9-1.81—Süchting, H.; John, G., et al. Investigations on the effect of manuring on forest soils. *Mitt. Forstwart. Forstwiss.* 4, 1933 (439). Z.P.D. 37 (360).
- 634.9-1.81—Bellmann, A. P. Experiments on the fertilization of shade trees. *Nat. Shade Tree Conf. Proc. Ann. Meet.* 10, 1934

## FERTILIZERS AND GENERAL AGRONOMY

(114-125). *Missouri Bot. Gard. Bull.* 22, 1934 (113-126). *Biol. Abs.* 10 (715).

**634.9-1.81—Guillebaud, W. H.** Forest manuring: a survey. *Forestry* 8, 1934 (136-149).

**634.9-1.81—Sørensen, H.** Effect of artificial fertilizers on young trees at Hornum. *Tidsskr. Planteavl* 41, 1936 (747-763). [D.e.]

**634.9-1.81—Hammer, R.** On the manuring of forest soil. *Sudtend. Forst-u. Jagdztg.* 37, 1937 (132-133). C.M.R. 17 (13).

**634.9-1.811—Mitchell, H. L.** Trends in the nitrogen, phosphorus, potassium and calcium content of the leaves of some forest trees during the growing season. *Black Rock Forest Pap.* 1, 1936 (30-44).

**634.9-1.821.1—Ganssen, R. H.** The present condition of a previously limed soil. *Forstarchiv* 11, 1935 (365-371). C.A. 30 (1920).

**634.9-1.821.1—Lendle, H.** The influence of special cultivation and liming on forest soils. *Forstwiss. Cbl.* 57, 1935 (477-494). C.A. 30 (1491).

**634.9-1.822:552.532.5—Albert, R.** A forest manurial investigation. *Forstarchiv* 12, 1936 (158-162). *Biol. Abs.* 11 (174). [G.]

## 634.95 SILVICULTURE

**634.95-1.4—Sierstorpff.** The improvement of poor soil. Studies in the Silesian province of Zulz. *Forstarchiv* 10, 1934 (209-217). *Biol. Abs.* 9 (173).

**634.95-1.432.2—Adams, W. R.** Studies in tolerance of New England forest trees. XII. Effect of thinning in plantations on some of the physical factors of the site and on the development of young northern white pine (*Pinus strobus* L.) and Scotch pine (*Pinus sylvestris* L.). *Vt. Agric. Expt. Sta. Bull.* 390, 1935, pp. 156.

**634.95-1.432.2—Diller, O. D.** Soil moisture content during critical periods in the regeneration of previously grazed farm woodlands. *J. Forestry* 35, 1937 (399-402).

**634.95-1.445.2—Gutschick, V.** On the origin and silvicultural handling of podzol and pan soils. *Sudtend. Forst-u. Jagdztg.* 36, No. 6, 1936 (82-84). C.M.R. 1936 (No. 470).

**634.952.2-1.416—Fehér, D.** Clearing of forests. *Silva* 20, 1932 (233-236). B.C.A. 54 (72).

**634.952.2-1.416—Tlurin, I. V.; Burenkov, V. A.; Maslov, A. S.** Contribution to the study of the swamping process of forest podzol soils after cutting. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (379-381).

**634.952.2-1.417.2—Süchting; Christmann.** Humus decomposition and clear cutting. *Mitt. Forstwiss. Forstwiss.* 6, 1935 (425-446). *Biol. Abs.* 10 (1767). [G.]

**634.952.2-1.432.2—Nemec, A.; Maňan, B.** The effect of forest cultivation and loosening on the absolute moisture capacity of the soil in the Adamov region of the Holy State Forest Administration in Slovakia. *Shorn Čsl. Akad. Zeměd.* 12, 1937 (90-96). [Cz.g.]

**634.953.6—Pitt-Schenkel, C. J. W.** Windbreaks in Tanganyika Territory, Kwimba district. *Emp. Forest. J.* 14, 1935 (54-59).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 634.953.6—Zon, R.** Shelter belts—futile dream or workable plan. *Science* 81, 1935 (391-394).
- 634.953.6—Bates, C. G.** The windbreak as a farm asset. *U.S.D.A. Farm. Bull.* 1405, 1936, pp. 19.
- 634.953.6—George, E. J.** Growth and survival of deciduous trees in shelter-belt experiments at Mandan, N. Dakota, 1915-34. *U.S.D.A. Tech. Bull.* 496, 1936, pp. 18. *Hort. Abs.* 6 (262).
- 634.953.6—Ross, N. M.** The rôle of trees in modifying the agriculture of the dry areas of the Prairie Provinces. *Sci. Agric.* 18, 1936 (266-269).
- 634.953.6—Ross, N. M.** Tree-planting in the semi-arid area of Canada. *Emp. J. Expt. Agric.* 4, 1936 (47-50).
- 634.953.6 : 551.58—Bodrov, V.** The influence of shelterbelts over the microclimate of adjacent territories. *J. Forestry* 34, 1936 (696-697).
- 634.953.6 : 551.58—Denuyl, D.** The zone of effective wind-break influence. *J. Forestry* 34, 1936 (689-695).
- 634.953.6 : 634.1 7—Palestine Gazette.** Windbreaks. *Agric. Suppl. Palestine Gaz.* 20, 1937 (141-144).
- 634.953.6-1.81—Chadwick, L. C.** Ohio shade tree fertilization experiments. *Proc. Tiedth Nat. Shade Tree Conf.* 1936 (55-66). C.M.R. 13 (5).
- 634.956.23—Percival, E.** Deforestation and streams. *Le Kura Ngahere, N.Z. J. Forestry* 4, 1936 (36-39). C.M.R. 14 (3).
- 634.956.23—Buffault, P.** Deforestation, its causes and consequences. *Rev. Eaux et Forêts* 75, 1937 (506-518). C.M.R. 18 (7).
- 634.956.4 : 553.97—Wilde, S. A.; Hull, H. H.** Use and function of peat in forest nurseries. *J. Amer. Soc. Agron.* 29, 1937 (299-313).
- 634.956.4-1.4 : 535.21—Mitchell, H. L.** The effect of varied solar radiation upon the growth, development and nutrient content of white pine seedlings, grown under nursery conditions. *Black Rock Forest Pap.* 1, 1936 (16-22).
- 634.956.4-1.453—Fraser, G. K.** A note on the effect on soil fertility of some poisonous substances used in nursery protection. *Scot. Forestry J.* 50, No. 1 (45-46). C.M.R. 1936 (No. 504).
- 634.956.4-1.453 : 546.19—St. George, R. A.** Forest nursery seedlings subject to arsenical injury in some soils. *J. Forestry* 33, 1935 (627-628). *Biol. Abs.* 11 (175).
- 634.956.4-1.459—Pendleton, R. L.; Curran, H. M.** Preventing soil erosion in forest nurseries. *Lingnan Sci. J.* 14, 1935 (439-443).
- 634.956.4-1.81—Chadwick, L. C.** The fertilization of shade trees in the nursery. *Proc. Amer. Soc. Hort. Sci.* 31, 1934 (357-360). E.S.R. 74 (348).
- 634.956.4-1.81—Greve, W.** Application of fertilizers in forest management. *Deut. Forstwart.* 18, 1936 (69-73). *Biol. Abs.* 10 (1516).
- 634.956.4-1.81—Stewart, A. B.** Some soil problems in forest nurseries. *Scot. Forestry J.* 1936 (86-92).
- 634.956.4-1.81—Bornebusch, C. H.** Use of artificial manures in forest nurseries. *Dansk Skovforen. Tidsskr.* No. 3, 1937 (116-168). C.M.R. 14 (7).
- 634.956.4-1.85—Delevoy, G.** Phosphate fertilizer trials in the forest nursery. *Bull. Soc. For. Belg.* 39, 1932 (407-414). *Biol. Abs.* 9 (1118).

## FERTILIZERS AND GENERAL AGRONOMY

- 634.956.4-1.85**—Nemec, A. The effect of phosphatic fertilizing on the growth of nursery spruce. *Phosphorsäure* 5, 1935 (659–705); *Ernähr. Pflanze* 32, 1936 (67–70). [G.]
- 634.956.4-1.874**—Nemec, A. Effect of green manuring on the growth of nursery stock in forest nurseries. *Forstwiss. Cbl.* 57, 1935 (221–228). C.A. 29 (6999).
- 634.956.4-1.874**—Guillebaud, W. H. Green manuring in forest nurseries. *J. Forestry Commission* 16, 1937 (20–32). •
- 634.956.4-1.878**—Wilde, S. A. The use of liquid humate fertilizers in forest nurseries. *J. Forestry* 35, 1937 (388–392).
- 634.956.4-1.893.123**—Bujakowsky, W. Nitrophoska as a nursery manure. *Forstarchiv* 13, No. 6–7, 1937 (110–113). C.M.R. 14 (6).
- 634.956.4-2.2**—Wilde, S. A. Soil nematodes in forest nurseries. *Phytopath.* 26, 1936 (198–199). B.C.A. 56 (73).
- 634.957**—Hess, E. New methods in afforestation (in the Swiss mountains). *Beih. Ztschr. Schweiz. Forstver.* 15, 1936 (5–45). C.M.R. 13 (6).
- 634.957**—Gerst, H. Practical hints on afforestation of wet morlands. *Süddeut. Forst- u. Jagdztg.* 37, No. 5, 1937 (52). C.M.R. No. 14 (5).
- 634.957:581.5**—Putod, R. Influence of soil cover on regeneration in Algerian afforestation. *Rev. Eaux et Forêts* 1937 (412–426). C.M.R. 17 (1). F.]
- 634.957:627.51**—Tamesis, F.; Sulit, C. Reforestation and flood control. *Making Echo* 16, No. 2, 1937 (80–97). C.M.R. 18 (4).
- 634.957-1.415.3**—Fehér, D. Afforestation experiments on Hungarian alkali soils. *Wien. Allg. Forst- u. Jagdztg.* 53, 1935 (181–182). *Biol. Abs.* 10 (1516).

## 634.97 FOREST TYPES. SPECIES

- 634.97-1.415.3**—Khrenova, A. E. The relation of tree species to soil salts. *Zap. Voronezh. S.-Kh. Inst.* 2, 1935 (19–34). *Forsch.-Dienst* 2 (57). R.]
- 634.97-1.415.3-1.434**—Harper, H. J. A preliminary survey of important factors which affect tree development in western Oklahoma. *Proc. Okla. Acad. Sci.* 15, 1935 (73–77). E.S.R. 74 (645).
- 634.97-1.44**—Turner, L. M. Some soil characters influencing the distribution of forest types and rate of growth of trees in Arkansas. *J. Forestry* 35, 1937 (5–11).
- 634.97-1.472**—Gast, P. R. Contrasts between the soil profiles developed under pines and hardwoods. *J. Forestry* 35, 1937 (11–16).
- 634.972-1.466.1**—Gordon, I. G. Roots of broad-leaved trees: Notes on mycorrhiza and certain other phenomena. *Scot. Forestry J.* 50, No. 2 (108–109). C.M.R. 11 (4).
- 634.972.1-2-1.811.2**—Mitchell, H. L.; Finn, R. F. The relative feeding power of oaks and maples for soil phosphorus. *Black Rock Forest Pap.* 1, No. 2, 1935 (6–9).
- 634.972.1-1.434**—Scholz, H. F. The effect of soil texture upon the growth of red and chestnut oaks. *Black Rock Forest Pap.* 1, 1937 (76–79).
- 634.972.1-1.44**—Davy, J. B. The oak problem in the New Forest. *Emp. Forest. J.* 15, 1936 (174–181).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 634.972.1-1.48—Laatsch, W. The tannic acid destruction of wet oak forest soils. *Forstwiss. Cbl.* 59, 1937 (237-247). C.A. 31 (5083).
- 634.972.1-1.81—Wyman, D. Growth experiments with pin oaks which are growing under lawn conditions. *Cornell Agric. Expt. Sta. Bull.* 646, 1936, pp. 22.
- 634.972.1-1.811—Sakharova, V. V. The dynamics of nutritive substances in forest soil. *Pedology* No. 4, 1935 (615-627) [R.e.]
- 634.972.1-2.191 : 546.72—Chadwick, L. C. Chlorosis of pin oaks. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (669-673). R.A.M. 15 (758).
- 634.972.3-1.81—Felcourt, E. de. The application of fertilizer to poplar plantations. *C.R.Acad. Agric.* 22, 1936 (657-662). C.A. 30 (6112). [F.]
- 634.972.4 : 581.144.2—Wood, O. M. The root system of a chestnut. *Proc. Nat. Shade Tree Conf.* 10, 1934 (95-98). E.S.R. 74 (46).
- 634.972.5-1.466.1—Harley, J. L. Ecological observations on the mycorrhiza of beech. *J. Ecol.* 25, 1937 (2). C.M.R. 19 (5).
- 634.972.6 : 550.35—Bernhauer, O. On the influence of soil radiation on the growth of birch. *Sudendeut. Forst-u. Jagdztg.* 37, No. 6, 1937 (59-61). C.M.R. 14 (5).
- 634.972.6-1.4—Skogen. Production of high quality birch. *Skogen* 21, 1934 (301-303). *Biol. Abs.* 9 (173).
- 634.972.6-1.411.1—Tamm, O. An experiment with birch renewal for the purpose of soil improvement on light sandy soils in southern Sweden. *Svenska Skogsvärdn. Tidskr.* 1936 (241-268). Sw.g.
- 634.972.8-2.191 : 662.764—Deuber, C. G. Effects on trees of an illuminating gas in the soil. *Plant Physiol.* 11, 1936 (401-412). E.S.R. 76 (819).
- 634.973.37-1.5—Pendleton, R. L. Ipi-ipi—a profitable crop for some of those now idle sugar-cane lands. *Sug. News* 16, 1935 (133-142).
- 634.973.37-1.5—Pendleton, R. L. Philippine experience in reforestation with ipil-ipil (*Leucaena glauca*) and its application to conditions in Kwantung Province, China. *Lingnan Sci. J.* 13, 1934 (211-224).
- 634.973.931-1.841.1—Corbett, J. S. Cutting back a young ash plantation. *Quant. J. Forestry* 29, 1935 (192-193). *Biol. Abs.* 10 (1515).
- 634.973.931-2.19—Ciferri, R. Rosette disease of ash grown in peach groves. *Boll. Sta. Pat. Veg.* 13 (n.s.), 1933 (554-560).
- 634.973.949-1.81—Roessel, B. W. P. Manuring of teak plantations. *Tectona* 29, 1936 (79-100). B.I.I. 34 (285).
- 634.975-1.4—Nilsen, J. Relation between the present distribution of *Pinus sylvestris* L. and geology. *Medd. Vestlandets Forst. Forsökssta.* No. 19, 1936, pp. 67. [N.g.]
- 634.975-1.4—Schaeffer, L. Forestry abroad: the larch problem. *Rev. Eaux et Forêts* 74, 1936. [F.]
- 634.975-1.4—Westveld, R. H. Soil characteristics in relation to the occurrence and growth of black spruce. *Amer. Soil Surv. Bull.* 17, 1936 (43-47).

## FERTILIZERS AND GENERAL AGRONOMY

**634.975-1.4 : 581.144.2—Stevens, C. L.** Root growth of white pine (*Pinus strobus* L.). *Yale Univ. Sch. Forestry Bull.* 32, 1931 (9-62). *Biol. Abs.* 9 (648).

**634.975-1.4 : 581.144.2—McQuilkin, W. E.** Root development of pitch pine, with some comparative observations on shortleaf pine. *J. Agric. Res.* 51, 1935 (983-1016).

**634.975-1.4 : 581.144.2—Turner, L. M.** A comparison of roots of southern shortleaf pine in three soils. *Ecology* 17, 1936 (649-658).

**634.975-1.4 : 581.5—Lutz, H. J.** Ecological relations in the pitch pine plains of southern New Jersey. *Yale Univ. Sch. Forestry Bull.* 38, 1934, pp. 80. E.S.R. 71 (783).

**634.975-1.4-1.589—Isaac, L. A. ; Hopkins, H. G.** The forest soil of the Douglas fir region and the changes wrought upon it by logging and slash burning. *Ecology* 18, 1937 (264-279).

**634.975-1.415.1—Demortier, G. ; Fouarge, J.** Note on the conditions of growth of Scotch Pine (*Pinus silvestris* L.) with regard to soil reaction. *Bull. Inst. Agron. Gembloux* 5, 1936 (1-11).

**634.975-1.415.1—Philippis, A. de.** Varieties of *Pinus nigra* and soil reaction. *Alpe* 24, No. 2-3, 1937 (58-64). C.M.R. 16 (9).

**634.975-1.416.1—Taylor, R. F.** Available nitrogen as a factor influencing the occurrence of Sitka spruce and Western hemlock seedlings in the forests of south-eastern Alaska. *Ecology* 16, 1935 (580-602).

**634.975-1.416.1 : 535.21—Gast, P. R.** Studies on the development of conifers in raw humus. III. The growth of Scots pine (*Pinus silvestris* L.) seedlings in pot culture of different soils under varied radiation intensities. *Medd. Skogsförsöksanst.* 29, 1937 (587-678). [E.Sw.]

**634.975-1.417.2—Bungert.** Larch as a humus former. *Silva* 24, 1936 (33-37). C.M.R. 2 (157).

**634.975-1.417.2—Heyward, F. ; Barnette, R. M.** Field characteristics and partial chemical analyses of the humus layer of longleaf pine forest soils. *Fla. Agric. Expt. Sta. Bull.* 302, 1936, pp. 27.

**634.975-1.417.2—Wittich.** The larch and its ability to form humus. *Silva* 24, 1936 (153-156, 161-163). C.M.R. 1936 (No. 422).

**634.975-1.43—Coile, T. S.** Relation of site index for shortleaf pine to certain physical properties of the soil. *J. Forestry* 33, 1935 (726-730). E.S.R. 74 (209).

**634.975-1.432.2—Goldthwait, L. ; Lyon, C. J.** Secondary growth of white pine in relation to its water supply. *Ecology* 18, 1937 (406-415).

**634.975-1.44—Lang, R.** Factors governing the habitat of larch trees. *Forstwiss. Cbl.* 56, 1934 (393-410). C.A. 29 (868).

**634.975-1.44—Ivanova, E. N.** Soils and salt accumulation in the lakes of the ribbon forests. *Trudy Soc. Izuch. Prirod. Resursov, Ser. Sib.* 10, 3, 1935 (35-119). *Pedology* 1937 (140).

**634.975-1.44—Kessell, S. L. ; Stoate, T. N.** Plant nutrients and pine growth. *Aust. Forestry* 1, 1936 (4-13).

**634.975-1.44—Turner, L. M.** Factors influencing the rate of growth of pine in Arkansas. *Ecology* 17, 1936 (227-240).



# BIBLIOGRAPHY OF SOIL SCIENCE

**634.975-1.44—Turner, L. M.** Growth of second-growth pine on the Coastal Plain soils of Arkansas. *Ark. Agric. Expt. Sta. Bull.* 342, 1937, pp. 52.

**634.975-1.46—Wittich.** The influence of the tree species grown, and particularly of larch, on the biological condition of the soil. *Nederl. Boschbouw. Tijdschr.* 9, 1936 (4-19). C.M.R. 2 (128). [G.]

**634.975-1.46—Hitschold.** Soil biology and yield in the pine plantations of the main forestry district of Gahrenberg. *Mitt. Forstent. Forstwiss.* 4, 1933 (33-87). *Bied. Zbl.* 6 (99). [G.]

**634.975-1.466.1 Rayner, M. C.** Mycorrhiza in relation to forestry. 1. *Forestry* 8, 1934 (96-123).

**634.975-1.466.1 Young, H. E.** A mycorrhiza-forming fungus of Pinus. *J. Aust. Inst. Agric. Sci.* 2, 1936 (32-34). C.M.R. 1936 (No. 447).

**634.975-1.466.1 Dominik, T.** Observations on the mycorrhizas of certain foreign coniferous trees acclimatized in Poland. *Rocz. Nauk Roln.* 41, 1937 (44-46). R.A.M. 16 (485). [P.L.]

**634.975-1.466.1—Mitchell, H. L.; Finn, R. F.; Rosendahl, R. O.** The relation between mycorrhizae and the growth and nutrient absorption of coniferous seedlings in nursery beds. *Black Rock Forest Pap.* 1, 1937 (58-73).

**634.975-1.466.1—Young, H. E.** Rhizopogon luteolus, a mycorrhizal fungus of pinus. *Forestry* 11, 1937 (30-31).

**634.975-1.466.1 : 581.144.2—Burbidge, N. T.** Root development in Pinus pinaster and the seasonal variation of its mycorrhizae. *Aust. Forestry* 1, 1936 (33-40).

**634.975-1.472 : 581.144.2—Lutz, H. J. et al.** The influence of soil profile horizons on root distribution of White Pine (*P. Strobus* L.). *Yale Forestry Bull.* 44, 1937, pp. 75. C.M.R. 19 (6).

**634.975-1.472-2.187—Heyward, F.** The effect of frequent fires on profile development on longleaf pine forest soils. *J. Forestry* 35, 1937 (23-27).

**634.975-1.547.1—Fisher, G. M.** Comparative germination of tree species on various kinds of surface-soil material in the Western white pine type. *Ecology* 16, 1935 (606-611).

**634.975-1.547.1—Roberts, E. G.** Germination and survival of longleaf pine. *J. Forestry* 34, 1936 (884, 885). E.S.R. 76 (193).

**634.975-1.62—Markus, R.** Effect of drainage on growth of pine and spruce on moor soil in Lettland. *Repts. Latvian Forest Res. Sta.* No. 5, 1936, pp. 204. C.M.R. No. 13 (3).

**634.975-1.622—Lunt, H. A.** Forest lysimeter studies under red pine. *Conn. Agric. Expt. Sta. Bull.* 394, 1937 (222-268). C.A. 31 (6791).

**634.975-1.811—Mitchell, H. L.** Pot culture tests of forest soil. *Black Rock Forest Bull.* 5, 1934, pp. 138.

**634.975-1.811—Lunt, H. A.** Forest lysimeter studies under pine. *Amer. Soil Surv. Bull.* 16, 1935 (86-92).

**634.975-1.811—Addoms, R. M.** Nutritional studies on loblolly pine. *Plant Physiol.* 12, 1937 (199-205).

**634.975-1.811—Askew, H. O.** The chemical composition of Pinus radiata needles. *N. Z. J. Sci. Tech.* 18, 1937 (651-655).

**634.975-1.811—Süchting, H.; Jessen, W.; Maurmann, G.** Investigation on the nutrient relationships of forests. II. The nutrient uptake and nutrient diffusion in the organs of some conifers. *Bodenk. Pflernähr.* 3, 1937 (345-368). [G.]

## FERTILIZERS AND GENERAL AGRONOMY

**634.975-1.811.1—Eliason, E. J.** Buckwheat as an indicator of the relative nitrogen requirement of conifers. *J. Forestry* 33, 1935 (628, 629). E.S.R. 73 (620).

**634.975-1.821.1—Ernst, F.** Stunted pine stock in Bavaria. *Forstwiss. Cbl.* 58, 1936 (745-764). C.A. 31 (3618).

**634.975-1.84—Nemec, A.** The effect of unbalanced nitrogen fertility on the growth of fir in forest nurseries. *Sborn. Čsl. Akad. Zvěd.* 12, 1937 (42-47). [Cz.g.]

**634.975-2.19—Nemec, A.** Deficiency appearances in pine seedlings. *Forstwiss. Cbl.* 58, 1936 (798-808). C.A. 31 (3618).

**634.975-2.19-1.454—Nemec, A.** Study of the mottling of pines in the Kevince forest nursery. *Sborn. Čsl. Akad. Zvěd.* 11, 1936 (531-534). [Cz.g.]

**634.975-2.19-1.811.3 Meier, K.** A yellowing disease of Thuja plants caused by lack of potash. *Landw. Jahrb. Schweiz* 3, 1937 (297-303). [G.]

**634.975-2.19-1.811.6—Becker, J.** The "yellow tip" disease of pine trees a symptom of magnesium deficiency. *Ernähr. Pflanze* 33, 1936 (1-7). [G.e.]

**634.975-2.4-1.415.1—Roth, C.** Root canker (damping off) of Norway spruce (*Picea excelsa* Link.). *Phytopath. Ztschr.* 276, 1935 (262-264). C.A. 29 (3371).

**634.975-2.591.24-1.512—Krammer.** Heather control in fir-pine plantations on Kemper light sandy soils with Ortstein and Orterde. *Forstwiss. Cbl.* 58, 1936 (523-527). *Biol. Abs.* 11 (175). G.

## 634.989.84 FOREST LITTER

**634.989.84—Bodman, G. B.** The forest floor developed under conditions of summer rainfall deficiency in a Californian pine and fir forest. *Amer. Soil Surv. Bull.* 16, 1935 (97-101).

**634.989.84—Zaitsev, B. D.** The influence of fir, pine and broadleaf forests on the chemical characteristics of forest litter. *Pedology* No. 4, 1935 (549-560). [R.e.]

**634.989.84—Colle, T. S.** Composition of the leaf litter of forest trees. *Soil Sci.* 43, 1937 (349-355).

**634.989.84-1.415.1—Venema, H. J.** Investigations on the pH of the litter of some sclerophyllic plants and of some Mediterranean red earth profiles. *Meded. LandbHoogesch. Wageningen* 37, 2, 1933 (2-26). [F.]

**634.989.84-1.416—Kleinschmidt; Deines; Olkers.** Acidity and the humus question in forest soils. *Allg. Forst-u. Jagd-Ztg.* 109, 1933 (209-214). B.C.A. 55 (383). [G.]

**634.989.84-1.416—Nemec, A.** Biochemical study of the influence of raking the forest bed on the soil and growth. *Sborn. Vyskum. Ústavu Zeměd. Čsl.* No. 103, 1933 (1-99). C.A. 29 (5561).

**634.989.84-1.416—Nemec, A.** Effect of raking-off surface litter on the composition of pine-forest soils. *Allg. Forst-u. Jagd-Ztg.* 109, 1933 (214-219). C.A. 30 (6485). [G.]

**634.989.84-1.416—Plice, M. J.** Acidity, antacid buffering, and nutrient content of forest litter in relation to humus and soil. *Cornell Agric. Expt. Sta. Mem.* 166, 1934, pp. 32.

**634.989.84-1.416—Perschina, M. N.** The influence of the methods of clearing the slashings from cut-over land on the chemistry

## BIBLIOGRAPHY OF SOIL SCIENCE

of turf-podzol soils in relation to the turf process. *Pedology* No. 5/6, 1935 (828-840). [R.e.]

**634.989.84-1.416—Wilde, S. A.; Buran, S. F.; Galloway, H. M.** Nutrient content and base exchange properties of organic layers of forest soils in the Lake States region. *Soil Sci.* 44, 1937 (221-238).

**634.989.84-1.432.2—Lake States Forest Experimental Station.** Forest litter and gravelly soils: effective conserves of water. *Lake States Forest Expt. Sta. Tech. Notes*, No. 124, 1937. C.M.R. 16 (6).

**634.989.84-1.434—Lunt, H. A.** The effect of forest litter removal upon the structure of the mineral soil. *J. Forestry* 35, 1937 (33-36). *Proc. Soil Sci. Soc. Amer.* 1, 1937 (59).

**634.989.84-1.452—Morikawa, Ken-ichi.** A study on the rejuvenation of pine forest. *Proc. Fifth Pacific Sci. Cong.* 1, 1933 (515-521). *Biol. Abs.* 10 (1517).

**634.989.84-1.452—Wiedmann, E.** The harmful effects of litter removal in east Germany. *Forstarchiv* 11, 1935 (386-390). C.A. 30 (5347).

**634.989.84-1.452—Zaitsev, B. D.** The characteristics of the chemical properties of forest litter and peat. *Trans. Int. Soc. Soil Sci. Soviet Sect. A*, 1935 (214-223). [G.]

**634.989.84-1.461.1 3 Stapp, C.; Bortels, H.** Microbiological investigations of the decomposition of forest litter. *Zbl. Bakt.* 90, 1934 (28-66). *Bull. Inst. Pasteur* 34 (310).

**634.989.84-1.461.1 3—Stapp, C.; Bortels, H.** Microbiological studies on the decomposition of forest vegetable matter. II. Tannin-splitting micro-organisms found in forest litter. *Zbl. Bakt.* 93, 1935 (45-56). C.A. 30 (3146). [G.]

**634.989.84-1.468—Ulrich, A. T.** The macro-fauna of forest litter. *Mitt. Forstunt. Forstwiss.* 4, 1933 (283-323). *Bird. Zbl.* 6 (97). [G.]

**634.989.84-1.468—Fourman, K. L.** Animal ecology, local climate and microclimate in relation to the recognition of the forest locality and the decomposition of litter in the stand considered on a basis of soil biology. *Mitt. Forstunt. Forstwiss.* 7, 1936 (596-615). C.M.R. 17 (12).

**634.989.84-1.468—Jacot, A. P.** Why study the fauna of the litter? *J. Forestry* 34, 1936 (581-583).

## 635 VEGETABLES

**635:546.56—Manns, M. M.; Churchman, W. L.; Manns, T. F.** The value of copper sulfate as a soil amendment on some truck crops, with a summary of work for 1936 on cotton and tobacco. *Trans. Peninsula Hort. Soc.* 1936 (92-99). C.A. 31 (7164).

**635:553.97—Ogg, W. G.** Peat and its uses in horticulture. *Sci. Hort.* 5, 1937 (153-161).

**635-1.4—Darbishire, F. V.; Tingker, M. A. H.** Influence of soil factors on growth of certain vegetables. *J. Roy. Hort. Soc.* 59, 1934 (251-273). B.C.A. 54 (326).

**635-1.4—Robinson, G. W.** Problems of horticultural soils. *Sci. Hort.* 5, 1937 (162-166).

# FERTILIZERS AND GENERAL AGRONOMY

635-1.413.41 : 581.192—Hester, J. B.; Shelton, F. A. The influence of certain replaceable bases in the soil upon the elemental composition of vegetable crops. *Soil Sci.* 42, 1936 (335-340).

635-1.415.1—Parker, M. M.; Hester, J. B.; Carolus, R. L. The effect of soil conditions on the growth and composition of certain vegetable crop plants as influenced by soil reaction. *Proc. Amer. Soc. Hort. Sci.* 30, 1933 (452-457). E.S.R. 72 (182).

635-1.416.7—Tiedjens, V. A.; Schermerhorn, L. G. Available calcium, a factor in salt balance for vegetable crops. *Soil Sci.* 42, 1936 (419-434).

635-1.42—Bray, R. H. Obtaining uniform maturity with soil tests. *Canning Age* 15, No. 11, 1934 (483-485, 503). E.S.R. 72 (591).

635-1.5—Taylor, H. V. Cultivation of salad crops. *Min. Agric. Bull.* 55, 1936, pp. 80. J.H.B. 5 (13244).

635-1.51—Moen, O. Experiments with grubbing vegetable plots. *Meld. Norges LandbrHøisk.* 15, 1935 (516-522). [N.e.]

635-1.544.7—Balashov, A. N. Mulching vegetable soils in the Leningrad region. *Plodoovoshchnoe Khoziastvo* No. 2, 1935 (14-15). *Pedology* 1936 (944). [R.]

635-1.544.7—Balashov, A. N. Results of investigations on mulching vegetables. *Plodoovoshchnoe Khoziastvo* No. 11, 1935 (32-33). [R.g.]

635-1.544.7—Balashov, A. N. Soil mulching under the northern conditions. *Khim. Sotsial. Zemled.* No. 11, 1936 (56-63). [R.e.]

635-1.544.7—Neuman, G. B. Results of investigations on mulching vegetables. *Plodoovoshchnoe Khoziastvo* No. 2, 1936 (13-16). [R.]

635-1.58—Witte, K. Culture in soil pots for transplanting early vegetable crops. *Landw. Jahrb.* 84, 1937 (357-376). [G.]

635-1.67—Mortensen, E.; Hawthorn, L. R. The use of evaporation records in irrigation experiments with truck crops. *Proc. Amer. Soc. Hort. Sci.* 30, 1933 (466-467). E.S.R. 72 (183).

635-1.67—Secrett, F. A. Irrigation of vegetable crops. *Sci. Hort.* 3, 1935 (82-96).

635-1.67—Secrett, F. A. Irrigation for horticultural market crops. *J. Roy. Hort. Soc.* 60, 1935 (294-303). *Hort. Abs.* 5 (156).

635-1.81—Glynne, M. D.; Garner, H. V. Research at Rothamsted of importance in horticulture. *Sci. Hort.* 3, 1935 (215-221).

635-1.81—Hoare, A. H. The manurial problem in relation to vegetable production. *Sci. Hort.* 3, 1935 (77-81).

635-1.81—Lloyd, J. S.; Lewis, E. P. Substitution of commercial fertilizers for manure in vegetable production. *Ill. Agric. Expt. Sta. Bull.* 421, 1935 (579-610).

635-1.81—Pichard, G. Seven years of experience in market gardening near Paris. *Ann. Agron.* 5 (n.s.), 1935 (51-71). [F.]

635-1.81—Cooper, J. R.; Watts, V. M. Fertilizers for Irish potatoes, sweet potatoes, tomatoes, musk melons and water melons. *Ark. Agric. Expt. Sta. Bull.* 338, 1936, pp. 37.

635-1.81—Esbjerg, N. Fertilizers for market garden crops. *Tidsskr. Planteavl* 41, 1936 (671-674). *Hort. Abs.* 7 (235).

635-1.81—Reinhold, J.; Maronke, G. Manuring of vegetables. *ForschDienst.* 1, 1936 (47-57). [G.]

635-1.81—Steer, W. L. Manurial experiments on vegetable crops in Lancashire. *Sci. Hort.* 3, 1937 (34-38). *Hort. Abs.* 7 (134).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 635-1.81 : 577.16 - Pfützer, G.; Pfaff, C. Investigations on the content of carotene and vitamin C in vegetables and fodders. *Angew. Chem.* 48, 1935 (581-583). J.H.B. 4 (363). B.C.A. 54 (1061).
- 635-1.81 : 577.16 - Ott, M. The effect of manuring on vitamin formation in agricultural and horticultural produce. *ForschDienst.* 4, 1937 (13-18). [G.]
- 635-1.81 : 577.16 - Ott, M. Vitamin C and the carotene content of field and garden crops with different fertilization. *Angew. Chem.* 50, 1937 (75-77). B.C.A. 56 (271).
- 635-1.81 : 577.16 - Tropical Agriculture. Effect of artificial manures on crop quality. *Trop. Agric. Trin.* 14, 1937 (178).
- 635-1.81 : 581.192 - Coleman, J. M.; Ruprecht, R. W. Effect of fertilizers and soil types on the mineral composition of vegetables. *J. Nutrit.* 9, 1935 (51-62). C.A. 29 (1565).
- 635-1.81 : 581.192 - Helmholz, W. The effect of mineral fertilizers on the keeping qualities, taste and canning possibilities of vegetables and potatoes. *Kunstdünger* 32, 1935 (39-42).
- 635-1.811 - Hill, H. Some fundamentals of nutrition of horticultural crop plants. *Sci. Agric.* 16, 1935 (21-26). C.A. 30 (213).
- 635-1.811 - Zimmerly, H. H. New approaches to elaphic and nutritional problems with horticultural plants. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (707-719).
- 635-1.811.9 - Tincker, M. A. H. The relation of growth substances to horticultural practice. *Nature* 2, 1937 (594-595).
- 635-1.811.9 : 546.56 - Echave, D. Copper, a biogenetic element in vegetables. Its determination in some plant species in Argentina. *Rev. Farm. Argentina* 78, 1937 (81-84). C.A. 31 (5844).
- 635-1.813 - Hester, J. B.; Zimmerly, H. H. Acid-neutral fertilizers in vegetable crop production in eastern Virginia. *Proc. First Ann. Meetg. Comm. Fert. Amer. Soc. Agron.* 1935 (38-43). C.A. 30 (4971).
- 635-1.813 - Hester, J. B. Influence of acid-neutral fertilizers on vegetable crop production in Eastern Virginia. *Amer. Fert.* 85, Aug. 8, 1936 (5-7, 24).
- 635-1.813 - Hester, J. B. The influence of non-acid-forming fertilizer mixtures upon vegetable crop production and the utilization of plant nutrients. *Amer. Fert.* 85, No. 10, 1936 (7 8, 24-25).
- 635-1.813 - Hester, J. B.; Shelton, F. A. The influence of acid-neutral fertilizers on vegetable crop production in Eastern Virginia. *Va. Truck Expt. Sta. Bull.* 90, 1936 (1291-1301).
- 635-1.821.1 - Burienkov, I. Liming vegetables. *Khim. Sotsial. Zemled.* No. 2, 1934 (27). [R.]
- 635-1.821.1 - Hester, J. B.; Parker, M. M.; Zimmerly, H. H. Truck crop investigations. Liming Coastal Plain soils. *Va. Truck Expt. Sta. Bull.* 91, 1936 (1307-1358).
- 635-1.824 - Carolus, R. L. Effects of magnesium deficiency in the soil on the yield, appearance and composition of vegetable crops. *Proc. Amer. Soc. Hort. Sci.* 31, 1934 (610-614). E.S.R. 75 (198).
- 635-1.824 - Carolus, R. L. Magnesium deficiency in vegetable crops. *Trans. Peninsula Hort. Soc.* 1934 (81-87). C.A. 29 (4875).
- 635-1.824 - Carolus, R. L.; Brown, B. E. Magnesium deficiency. I. The value of magnesium compounds in vegetable

## FERTILIZERS AND GENERAL AGRONOMY

- production in Virginia. *Va. Truck Expt. Sta. Bull.* 89, 1935 (1250-1288). E.S.R. 75 (780).
- 635-1.824—Wiadrowska, J.** An attempt to increase the supply of magnesium in horticultural plants by treatment. *Rocz. Nauk Roln.* 37, 1936 (305-332). [P.L.]
- 635-1.828 : 546.15—Kleim.** Effect of potassium iodide on vegetables. *Rhein. Mschr. Obst* 26, 1933 (274). Z.P.D. 37 (238).
- 635-1.828 : 546.15—Vogel, F.** The effect of iodine on different vegetables. *Obst- u. Gemüseb.* 80, 1934 (19). Z.P.D. 41 (363).
- 635-1.828 : 546.15—Mack, W. B.; Brasher, E. P.** The influence of commercial fertilizers, potassium iodide and soil activity on the iodine content of certain vegetables. *J. Agric. Res.* 53, 1936 (789-800). C.A. 31 (2337).
- 635-1.83—Vogel, F.** The importance of potash manuring in vegetable growing as demonstrated in experiments carried out at Weihenstephan. *Ernähr. Pflanze* 33, 1937 (229-234). [G.]
- 635-1.841.8—Kachaev, A. P.; Smelschikov, V. V.** The utilization of ammonia liquor as a source of nitrogen for vegetables. *Trudy Gdrotz. Inst. Udob. Leningr. Lab.* No. 3, 1934 (166-174). C.A. 29 (2282). [R.]
- 635-1.842—Ware, L. M.** Nitrate requirements of truck crops on newly cleared land. *Proc. Amer. Soc. Hort. Sci.* 32, 1935 (555-559). E.S.R. 76 (626).
- 635-1.853—Wilhelm, A.; Gericke, S.; Siemens, K. H.** Fertilizer tests with basic slag and vegetables. *Phosphorsäure* 5, 1935 (467-486).
- 635-1.87—Sakai, N.** Influence of organic manure on the yield and quality of vegetables. *J. Sci. Soil Japan* 10, 1936 (37-46). [J.e.]
- 635-1.874—Mamchenkov, I. P.; Pashkovskaia, A. E.** Green manures for vegetables. *Khim. Sotsial. Zemled.* No. 12, 1936 (23-32). [R.]
- 635-1.877—Vishins'ky, A. M.; Yunik, S. M.** Sludge from irrigated fields as manure for vegetables. *Trudy Inst. Agrogrunt. Khim.* 1936 (138-152). [U.r.g.]
- 635-1.878—Limbach, R.** The application of Nettolin in market gardening. *Obst- u. Gemüseb.* 80, 1934 (122). Z.P.D. 41 (377).
- 635-1.878—Reinhold, J.** A contribution to the question of the physiological nutrition effect of Nettolin-fertilizer for vegetable crops. *Bodenk. Pflernähr.* 4, 1937 (72-120). [G.]
- 635.13-1.421—Currence, T. M.** Relation of plot size and shape to variability of carrot yields on peat soils. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (484-488).
- 635.13-1.432.2—Barnes, W. C.** Effects of some environmental factors on growth and color of carrots. *Cornell Agric. Expt. Sta. Mem.* 186, 1936, pp. 36.
- 635.13-1.44—Miller, J. C.; Cochran, F. D.; Garrison, O. B.** Some factors affecting color in carrots. *Proc. Assoc. S. Agric. Workers*, 34th, 35th, 36th Ann. Conv. 1933-35 (551-552). C.A. 30 (2684).
- 635.24-1.5—Boswell, V. R.** Growing the Jerusalem artichoke. *U.S.D.A. Leaflet* 116, 1936, pp. 8.
- 635.24-1.5—Strazh, R.; Tomashuk, S.** Jerusalem artichokes on the loess loams of the non-chernozem region. *Trudy Belorussk. S. Kh. Inst.* 5, 1936 (107-126). [R.g.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- 635.25-1.411.4-1.81—Knott, J. E. Fertilizing onions on muck soils. *Cornell Agric. Expt. Sta. Bull.* 650, 1936, pp. 20. *Hort. Abs.* 6 (278).
- 635.25-1.445.7—Terra, G. J. A. Onion growing in the tropics. *Landbouw* 12, 1936 (117-132). *Hort. Abs.* 6 (309). [Duc.]
- 635.25-1.5—Hoare, A. H. Onion growing in England: a new commercial method. *J. Min. Agric.* 43, 1936 (333-340). *Hort. Abs.* 7 (46).
- 635.25-1.67—Curry, A. S. Irrigation experiments with the Early Grano onion. *New Mex. Agric. Expt. Sta. Bull.* 245, 1937, pp. 39. E.S.R. 77 (482).
- 635.25-1.81—Fite, A. B. Onion fertilizer experiments. *N. Mex. Agric. Expt. Sta. Bull.* 233, 1935, pp. 22.
- 635.25-1.81—Hawthorn, L. R. Fertilizer experiments with yellow Bermuda onions in the winter garden region of Texas. *Tex. Agric. Expt. Sta. Bull.* 524, 1936, pp. 35.
- 635.25-1.828—Knott, J. E. The effect of certain salts on the growth of onions. *Proc. Amer. Soc. Hort. Sci.* 31, 1934 (561-563). E.S.R. 74 (639).
- 635.25-1.86—Chroboczek, E. Study of some problems connected with growing and storage of onions. *Roczn. Nauk. Ogród.* 3, 1936 (57-137). *Hort. Abs.* 7 (47). [P.L.E.]
- 635.31-1.5—Hanna, G. C. Asparagus production in California. *Calif. Agric. Expt. Sta. Circ.* 91, 1935, pp. 32.
- 635.31-1.5—Wallace, J. C. The cultivation of asparagus. *J. Min. Agric.* 43, 1936 (241-244).
- 635.31-1.81:577.16—Fellers, C. R.; Young, R. E. et al. Effect of fertilization, freezing, cooking and canning on the vitamin C and A contents of asparagus. *Proc. Amer. Soc. Hort. Sci.* 1933, 31, 1934 (145-151). C.A. 30 (8419).
- 635.32-1.4—Sprague, H. B.; Farno, N. F.; Colby, W. G. The effect of soil conditions and treatment on yields of tubers and sugar from the American artichoke (*Helianthus tuberosus*). *J. Amer. Soc. Agron.* 27, 1935 (392-399).
- 635.32-1.5—Tavernetti, A. A. Production of the globe artichoke in California. *Calif. Agric. Expt. Sta. Ext. Circ.* 76, 1933, pp. 24.
- 635.34-1.5—Wadleigh, C.; Brown, H. D.; Young, R. Factors affecting the yield of kraut cabbage in Ohio as determined by a survey and co-operative field tests. *Ohio Agric. Expt. Sta. Bull.* 566, 1936, pp. 29.
- 635.34-1.81—Odland, T. E.; Crandall, F. K. Response of early cabbage to manures and fertilizers. *Proc. Amer. Soc. Hort. Sci.* 30, 1933 (470-474). E.S.R. 72 (184).
- 635.34-1.81—Reinhold, J.; Kochs, et al. The influence of fertilizing on the yield and quality of cabbage. *Ztschr. Pflanz. Düng.* 39, 1935 (198-211). [G.]
- 635.34-1.81—Truninger, E.; Keller, F.; Pulver, H. The influence of fertilizing on the yield of white cabbage and its suitability to pickled cabbage manufacture. *Landw. Jahrb. Schweiz* 49, 1935 (1-15). [G.L.]
- 635.34-1.81—Fite, A. B. Fertilizers for early cabbage. *N. Mex. Agric. Expt. Sta. Bull.* 235, 1936, pp. 21.
- 635.34-1.811.3—Becker, J. Investigations on the potassium requirements of cabbage species. *Ernähr. Pflanze* 32, 1936 (313-318). [G.e.]

## FERTILIZERS AND GENERAL AGRONOMY

- 635.34-1.84—Moen, O.** Experiments with different nitrogen fertilizers on white cabbage. *Meld. Norges LandbrHøisk.* 15, 1935 (540-547). [N.e.]
- 635.34-2.4—Gutsevich, S. A.** "Black leg" disease of cabbage, *Moniliopsis aderholdii* Ruhl. *Trav. Soc. Nat. Leningr.* 63, 1934 (69-82). C.A. 29 (7396). R.A.M. 14 (474).
- 635.34-2.4-1.813—Brezhnev, I. E.** Effect of fertilizers on development of cabbage diseases. *Trav. Soc. Nat. Leningr.* 63, 1934 (83-109). B.C.A. 55 (950). C.A. 28 (7004).
- 635.34-2.4-1.813—Honig, F.** Club root of cabbage (*Plasmodiophora brassicae* Wor.). *Gartenbauwiss.* 5, 1935 (116-225). [G.]
- 635.34-2.4-1.821.1—Whitehead, T.** Experiments on the use of lime in controlling finger and toe disease of Brassicae. *Welsh J. Agric.* 12, 1936 (183-192).
- 635.34-2.4-1.841.5—Walker, J. C.; Larson, R. H.** Calcium cyanamide in relation to control of clubroot of cabbage. *J. Agric. Res.* 51, 1935 (183-189). B.C.A. 54 (1061).
- 635.346-2-1.81—Brown, W.** A study of the deterioration of seakale stocks, with notes on some diseases of that crop. *J. Pomol.* 15, 1937 (69-85).
- 635.347-1.81—Zuhr; Wildner.** Experiments with the cultivation of marrow stem kale in Kaaden (Bohemia). *Bl. PflBau. PflZucht. Csl.* 12, 1934 (3). Z.P.D. 38 (251).
- 635.35-1.81—Abbiss, H. W.** Winter cauliflower or broccoli. *Fruit-Grower* 82, 1936 (873-874).
- 635.35-2.19:546.27—Dearborn, C. H.; Raleigh, G. J.** A preliminary note on the control of internal browning of cauliflower by the use of boron. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (622-623). R.A.M. 15 (769).
- 635.41-1.5—Scott, G. W.** Spinach production in California. *Calif. Agric. Expt. Sta. Circ.* 92, 1935, pp. 26.
- 635.41-1.81:577.16—Hahn, F. V. van; Görbing, J.** Vitamin studies. VI. Influence of fertilizing on the vitamin C content of spinach. *Ztschr. Untersuch. Lebensmitt.* 65, 1933 (601). Z.P.D. 37 (122). [G.]
- 635.41-1.84—Lewis, E. P.** Fertilizer experiments with vegetables. *Trans. Ill. St. Hort. Soc.* 67, 1933 (416-421). C.A. 28 (6228).
- 635.41-1.84—Parker, M. M.** Injurious effects of certain nitrogenous fertilizers on the growth of spinach. *Proc. Amer. Soc. Hort. Sci.* 31, 1934 (546-548). E.S.R. 74 (640).
- 635.52-1.547.1-1.4—Thompson, R. C.** Some soil conditions affecting lettuce seed germination. *Proc. Amer. Soc. Hort. Sci.* 31, 1934 (572-577). E.S.R. 74 (637).
- 635.52-1.81—Claypool, L. L.** Influence of fertilizer treatment on lettuce head and seed production. *Proc. Amer. Soc. Hort. Sci.* 29, 1933 (438-441). *Biol. Abs.* 9 (409).
- 635.52-1.81—Claypool, L. L.** Further studies relative to fertilizer treatment of lettuce. *Proc. Amer. Soc. Hort. Sci.* 30, 1933 (548-549). E.S.R. 72 (329).
- 635.52-2.19-1.811.2—Woodman, R. M.** Pure silica sand as a basis for phosphate deficiency tests in lettuce. *Sands, Clays and Minerals* 3, 1936 (22-27). B.C.A. 56 (168). C.A. 31 (1141).
- 635.52-2.2-1.5—Townsend, G. R.** Bottom rot of lettuce. *Cornell Agric. Expt. Sta. Mem.* 158, 1934, pp. 46. E.S.R. 72 (208).



**635.53-1.5—Quinn, N. R.** Celery growing. *J. Dept. Agric. N. Aust.* 40, 1937 (497-501). *B.I.L.* 35 (253).

**635.53-1.81—Crandall, F. K.** The response of celery to manures and fertilizers. *R.I. Agric. Expt. Sta. Bull.* 260, 1937, pp. 22.

**635.53-1.81 : 581.192—Schuphan, W.** Investigations on the important faults in quality of tuberous celery with reference to the change in composition due to fertilizers. *Bodenk. PflErnähr.* 2, 1937 (255-304). [G.]

**635.53-1.828 : 546.27—Purvis, E. R. ; Ruprecht, R. W.** Borax as a fertilizer for celery. *Amer. Fert.* 83, Sept. 21, 1935 (28).

**635.53-1.84—Bourque, L.** Some investigations with regard to the effect of nitrogen on the storage qualities of celery. *Sci. Agric.* 17, 1937 (741).

**635.53-2.19 : 546.27—Purvis, E. R. ; Ruprecht, R. W.** Cracked stem of celery caused by a boron deficiency in the soil. *Via. Agric. Expt. Sta. Bull.* 307, 1937, pp. 16.

**635.53-2.191—Robbins, W. R.** Celery chlorosis. *N. J. Agric.* 15, No. 3, 1933 (5-6). *B.C.A.* 54 (516).

**635.61-1.4—Kartashev, N.** Fodder water melon. *Semenovodstvo* No. 8, 1935 (36-37). *Herb. Abs.* 6 (196).

**635.61-1.67—Fleming, W. M.** Irrigation of cantaloupes. *Sci. Agric.* 16, 1936 (634-643). *Hort. Abs.* 6 (253).

**635.63-1.81—Reinhold, J. ; Merten, O. ; Gross, M.** Experiments on the influence of fertilization upon yield and quality of pickling cucumbers. *Bodenk. PflErnähr.* 4, 1937 (188-210). *C.A.* 31 (7578). [G.]

**635.64 : 546.331.31—Yur'ev, A. V.** The influence of chloride upon the growth of tomatoes. *Konservatsia Prod.* No. 5, 1935 (20-24). *C.A.* 30 (1498).

**635.64-1.415.1—Parker, M. M.** The influence of soil reaction upon the growth of the tomato plant. *Proc. Amer. Soc. Hort. Sci.* 32, 1935 (544-545). *Hort. Abs.* 5 (416).

**635.64-1.432.2 : 581.192—Emmert, F. M.** Effect of drought on the nutrient levels in the tomato plant. *Soil Sci.* 41, 1936 (67-70).

**635.64-1.432.2 : 581.192—Foster, A. C. ; Tatman, F. C.** The influence of soil moisture and fertilizers on the specific electrical conductivity of tomato plant sap. *Amer. J. Bot.* 24, 1937 (35-39).

**635.64-1.544.7—McCubbin, E. N. ; Westover, K. C.** The influence of soil type on results from paper mulch trials with tomatoes. *Proc. Amer. Soc. Hort. Sci.* 29, 1933 (458-462). *Biol. Abs.* 9 (412).

**635.64-1.67—Brown, H. D. ; Price, C. V.** Effect of irrigation, degree of maturity and shading upon the yield and degree of cracking of tomatoes. *Proc. Amer. Soc. Hort. Sci.* 32, 1935 (524-528).

**635.64-1.81—Carolus, R. L.** Tomato fertilization. II. Effect of different fertilizer ratios on the chemical composition of tomatoes. *Va. Truck Expt. Sta. Bull.* 81, 1933 (1085-1117). *C.A.* 28 (7405).

**635.64-1.81—Mack, W. B. ; Stout, G. J.** The effect of nutrients on the water relations of tomato plants. *Proc. Amer. Soc. Hort. Sci.* 31, 1934 (536-540). *E.S.R.* 74 (341).

**635.64-1.81—Zacharewicz, E.** Tomato culture. Chemical fertilizer experiments. *Prog. Agric. Vitic.* 101, 1934 (399-402). *C.A.* 28 (7405).

## FERTILIZERS AND GENERAL AGRONOMY

**635.64-1.81—Parker, M. M.** Tomato fertilization. I. The effect of different fertilizer ratios on the yield of tomatoes. *Va. Truck Expt. Sta. Bull.* 80, 1935.

**635.64-1.81—Thomas, R. P.** Effect of fertilizer treatments of a soil on the quality and yield of tomatoes. *Md. Agric. Expt. Sta. Bull.* 386, 1935 (369-389). E.S.R. 75 (201).

**635.64-1.81—Haut, I. C.; Webster, J. E.; Cochran, G. W.** The influence of commercial fertilizers upon the firmness and chemical composition of strawberries and tomatoes. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (405-410).

**635.64-1.81—Krausche, K. K.; Gilbert, B. E.** Variations in fleshiness of tomato fruits as affected by manuring. *Plant Physiol.* 11, 1936 (641-645). B.C.A. 56 (273).

**635.64-1.811.9—McHargue, J. S.; Calfee, R. K.** The necessity of minor elements for the growth of tomatoes in a poor soil. *Amer. Fert.* 85, Sept. 19, 1936 (24).

**635.64-1.811.9—McHargue, J. S.; Calfee, R. K.** The necessity of minor elements for the growth of tomatoes in a poor soil. *J. Amer. Soc. Agron.* 29, 1937 (385-391).

**635.64-1.816.2—Lambin, A. Z.; Lambina, T. F.** The effect of fractional application of mineral fertilizer salts on the yield of tomatoes and carrots and on the sugar transformation in tomatoes. *Trudy Omsk. Inst. S.-Kh.* 1, No. 3, 1935 (33-47). [R.g.]

**635.64-1.84—Hoffman, J. C.** The influence of nitrate and ammonium nitrogen on the growth of greenhouse tomatoes in soils of different reaction. *Proc. Amer. Soc. Hort. Sci.* 32, 1935 (541-543). *Hort. Abs.* 5 (158).

**635.64-1.84—Hoffman, J. C.** The influence of nitrate and ammonium nitrogen on the growth of greenhouse tomatoes in soils of different reaction. *Ohio Veg. Grow. Assoc. Proc.* 1935 (35-38). C.A. 29 (7555).

**635.64-1.842.3—Gilbert, B. E.; Pember, F. R.** Economical amounts of nitrate of soda to apply in the greenhouse for the growth of tomatoes. *R. I. Agric. Expt. Sta. Bull.* 252, 1935, pp. 14.

**635.64-2.2—Johnson, L. R.; Thompson, H. W.** Tomato sickness in Yorkshire. *J. Min. Agric.* 43, 1936 (48-54). *Hort. Abs.* 7 (52).

**635.64-2.4—Brien, R. M.; Chamberlain, E. E.** Tomato-seedling damping-off. *N. Z. J. Agric.* 52, 1936 (257-267).

**635.646-1.5—Beattie, J. H.** Production of eggplant. *U.S.D.A. Leaflet* 131, 1937, pp. 4.

**635.646-1.81—Zacharewicz, E.** Egg-plant culture. Tests of chemical fertilizers. *Prog. Agric. Vitic.* 103, 1935 (495-501). C.A. 29 (7003).

**635.65-1.421—Loesell, C. M.** Size of plat and number of replications necessary for varietal trials with white pea beans. *J. Amer. Soc. Agron.* 28, 1936 (534-547).

**635.65-1.5—Ministry of Agriculture and Fisheries.** Beans. *Min. Agric. Bull.* 87, 1936, pp. 68.

**635.65-1.816.3—Sayre, C. B.** Root development of beans, cabbage and tomatoes as affected by fertilizer placement. *Proc. Amer. Soc. Hort. Sci.* 31, 1934 (564-571). E.S.R. 74 (338).

**635.65-1.816.3—Serviss, G. H.** Machine placement of fertilizers applied to snap beans in Florida. *Proc. Fla. Hort. Soc.* 47, 1934 (39-41). *Biol. Abs.* 10 (1252).

# BIBLIOGRAPHY OF SOIL SCIENCE

- 635.65-1.816.3—Cumings, G. A. ; Sharp, A. L. et al.** Machine placement of fertilizers for snap beans in Florida. *U.S.D.A. Circ.* 399, 1936, pp. 42.
- 635.65-1.83—Troubetzkoi, P.** The earliness of crops. *Potasse* 9, 1935 (43-45). [F.]
- 635.65-2.19:546.711—Townsend, G. R. ; Wedgeworth, H. H.** A manganese deficiency affecting beans. *Fla. Agric. Expt. Sta. Bull.* 300, 1936, pp. 23.
- 635.65-2.4-1.811.3—Hogg, W. H.** Chocolate spot of beans. *Seale Hayne Agric. Coll. 9th Ann. Rept.* 1933 (21-22). B.C.A. 54 (74).
- 635.65-2.4-1.811.3—Cowie, G. A.** "Chocolate spot" in beans. *Fert. Feed. J.* 21, 1936 (132).
- 635.65-2.4-1.811.3—Watson, J. A. S.** Notes on manuring. *J. Min. Agric.* 43, 1936 (178-181). R.A.M. 15 (697).
- 635.656-1.4—Vincent, C. L.** Growing peas for canning in Washington. *Wash. Agric. Expt. Sta. Pop. Bull.* 150, 1936, pp. 28.
- 635.656-1.4—Klinkowski, M.** The constitution of the pea plant. *Ernähr. Pflanze* 33, 1937 (285-289). G.e.sp.
- 635.656-1.461.52:546.56—Leonard, L. T.** Pea rhizobia and red copper oxide. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (219).
- 635.656-1.81:581.192—Jodidi, S. L.** Distribution of the non-protein nitrogen of the Alaska pea. *J. Franklin Inst.* 218, 1934 (581-591). C.A. 29 (1569).
- 635.656-1.81:581.192—Musbach, F. L. ; Sell, O. E.** Effect of fertilizer on quality and chemical composition of canning peas. *J. Agric. Res.* 53, 1936 (869-789).
- 635.656-1.816.3—Sayre, C. B. ; Cumings, G. A.** Fertilizer placement for cannery peas. *N. Y. St. Agric. Expt. Sta. Bull.* 659, 1936, pp. 30.
- 635.656-2.19:546.711—Pethybridge, G. H.** Marsh spot in pea seeds: is it a deficiency? *J. Min. Agric.* 43, 1936 (55-58).
- 635.656-2.19:546.711—Koopman, C.** The influence of manganese sulphate spraying on marsh spot of Schokker peas. *Tijdschr. PflZicht.* 43, 1937 (64-66). R.A.M. 16 (582).
- 635.656-2.19:546.711—Ovinge, A.** Marsh spot in Schokker peas. *Tijdschr. PflZicht.* 43, 1937 (67-73). R.A.M. 16 (582).
- 635.656-2.19-1.432—Furneaux, B. S. ; Glasscock, H. H.** Soils in relation to marsh spot of pea seed. *J. Agric. Sci.* 26, 1936 (59-84).
- 635.656-2.2—Walton, C. L. ; Ogilvie, L.** Pea sickness. *Worcs. Agric. Chron.* 3, 1935 (151-153).
- 635.656-2.2-1.841.5—Walton, C. L. ; Ogilvie, L. ; Mulligan, B. O.** The effect of calcium cyanamide and of formalin on pea "sickness". *J. Bath and West Soc.* 9, 1935 (137-140).
- 635.656-2.2-1.841.5—Walton, C. L. et al.** The effect of calcium cyanamide on pea and potato sickness. *J. Bath and West Soc.* 10, 1936 (187-193). *Hort. Abs.* 6 (127).
- 635.656-2.4-1.84—Geach, W. L.** Root rot of grey peas in Tasmania. *Aust. J. Coun. Sci. Indust. Res.* 9, 1936 (77-87).
- 635.7-1.5—Hutchins, A. E. ; Sando, L.** Herbs. Their culture and uses. *Minn. Hort.* 64, 1936 (3-4, 31-32, 48-50, 69-70, 90-91, 112-113, 131-133). *Hort. Abs.* 6 (121, 272).
- 635.8-1.5—Ware, W. M.** Mushroom growing. *Min. Agric. Bull.* 34, 1934, pp. 28. *Hort. Abs.* 5 (250).

## FERTILIZERS AND GENERAL AGRONOMY

**635.8-1.5—Demolon, A. et al.** Artificial farmyard manure for mushroom growing. *C.R. Acad. Agric.* 21, 1935 (464-468.) *Hort. Abs.* 6 (45). [F.]

**635.8-1.5—Klushnikova, E. S.; Viatkina, A. G.; Vasiliev, A. V. et al.** General conditions for the cultivation of mushrooms; substrata, varieties, and germination of spores. *Bull. Moscow Soc. Nat.* 4, 1935 (218-265). *R.A.M.* 15 (699). [R.e.]

**635.8-1.5—Morwood, R. B.** Mushrooms. *Queensland Agric. J.* 46, 1936 (26-29).

**635.8-1.875—Waksman, S. A.** Soil and crops. [Composts for mushroom culture]. *N. J. Agric.* 15, No. 1, 1935 (6-7). *B.C.A.* 54 (516).

**635.8-1.875—Pizer, N. H.** Improvement of mushroom composts. *Gard. Chron.* 100, 1936 (112). *J.H.B.* 5 (B219).

**635.8-1.875—Demolon, A.; Burgevin, H.; Marcel, M.** Mushroom culture on artificial manure. *Ann. Sci. Nat. Ser. Bot. Zool.* 19, 1937 (141-153). [F.]

**635.8-1.875—Pizer, N. H.** Investigations into the environment and nutrition of the cultivated mushroom *Psalliota campestris*. 1. Some properties of composts in relation to the growth of the mycelium. *J. Agric. Sci.* 27, 1937 (349-376).

**635.8-2.954.8—Shear, G. M.** Growth of *Agaricus campestris* on plots treated with sodium chlorate. *Phytopath.* 25, 1935 (440-442). *B.C.A.* 54 (690).

## 635.9 FLORICULTURE

**635.9-1.81—Wyman, D.** Research in ornamental horticulture in the United States. *Commun. 11th Int. Hort. Cong. Rome* 1935, pp. 92. *Hort. Abs.* 5 (251).

**635.935.724-1.81—Parker, M. M.** The effect of fertilizers on the yield of narcissus bulbs. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (678-682). *Hort. Abs.* 6 (287).

**635.935.79-1.5—Waugh, F. A.** The bulbous iris and its outdoor culture in Massachusetts. *Mass. Agric. Expt. Sta. Bull.* 330, 1936, pp. 15.

**635.935.79-1.5—Shoemaker, J. S.; Adamson, R. M.** Gladiolus culture. *Alberta Univ. Coll. Agric. Bull.* 27, 1937, pp. 65.

**635.935.79-1.544.3—Tavernettil, J. R.; Emsweller, S. L.** Forcing gladiolus outdoors by heating the soil with electricity. *Calif. Agric. Expt. Sta. Bull.* 584, 1934, pp. 14. *Hort. Abs.* 5 (31).

**635.937.12-1.828: 546.621—Allen, R. C.** Controlling the color of greenhouse hydrangeas (*Hydrangea macrophylla*) by soil treatments with aluminium sulfate and other materials. *Proc. Amer. Soc. Hort. Sci.* 32, 1934 (632-634). *C.A.* 29 (7389).

**635.937.12-2.191: 546.72—Poesch, G. H.** Chlorosis of *Hydrangea hortensis*. *Ohio Agric. Expt. Sta. Bimo. Bull.* 175, 1935 (142-143). *C.A.* 30 (1170).

**635.937.34-1.415.1—Daunoy, H. L.** One requisite of successful rose-growing. *Amer. Rose Ann.* 1936 (85-88). *C.A.* 30 (6870).

**635.937.34-1.5—Bontcheff, E.** Otto of roses. *Mfg. Chem.* 6, 1935 (296-299, 325-328, 366-369). *B.I.I.* 34 (120).

**635.937.34-2.191—Clapp, K. N.** The cause of chlorosis, or yellowing. *Amer. Rose Ann.* 1931 (41-47). *C.A.* 30 (1170).

## BIBLIOGRAPHY OF SOIL SCIENCE

- 635.939.1-1.5**—Ministry of Agriculture and Fisheries. Lavender: its cultivation for marketing and distilling. *Min. Agric. Advis. Leaflet*, 264, 1936, pp. 4. *Hort. Abs.* 6 (128).
- 635.939.124-1.415.1**—Barnette, R. M.; Mowry, H. Soil reaction and azalea growth. *Soil Sci.* 41, 1936 (71-78).
- 635.939.94-1.5**—Sylva, K. J. A. Notes on orchids cultivated in Ceylon. *Trop. Agricult.* 87, 1936 (174-175).
- 635.939.98-2.4**—Wager, V. A. Aster wilt in South Africa. *S. Afric. J. Sci.* 29, 1932 (301-312). *Biol. Abs.* 9 (279).
- 635.944-1.5**—Griffiths, D. Tulips. *U.S.D.A. Circ.* 372, 1936, pp. 63.
- 635.944-1.81**—Gibson, G. W. Some observations on the manuring of bulbs. *Sci. Hort.* 3, 1935 (174-183).
- 635.944-1.81**—Handley, F. W. Fertilizing tulips. *Holland C. C. Bulb Res. Sub-Comm. Expts. with Bulbs, Rept.* 1933, 1934 (21-26). *B.C.A.* 54 (36).
- 635.964: 546.331.31**—Stoutmeyer, V. T.; Smith, F. B. The effect of sodium chloride on some turf plants and soils. *J. Amer. Soc. Agron.* 28, 1936 (16-23).
- 635.964-1.415.1**—Moses, D. Fertility and soil reaction in turf production. *S. Afric. J. Sci.* 31, 1934 (288-298).
- 635.964-1.415.1**—Dersal, W. R. van. The ecology of a lawn. *Ecology* 17, 1936 (515-527).
- 635.964-1.5**—Madden, E. A. Garden lawns and playing greens. Establishment and maintenance. *N.Z. J. Agric.* 50, 1935 (201-214). *B.C.A.* 55 (115).
- 635.964-1.5**—Tyson, J. Management of bent grass lawns. *Mich. Agric. Expt. Sta. Circ.* 156, 1936, pp. 18. *E.S.R.* 75 (476).
- 635.964-1.5**—Lambourne, J. Lawn grasses and their maintenance. *Malay. Agric. J.* 25, 1937 (3-10).
- 635.964-1.67**—Welton, F. A.; Carroll, J. C.; Wilson, J. D. Artificial watering of lawn grass. *Ecology* 15, 1934 (380-387). *E.S.R.* 72 (608).
- 635.964-1.81**—Reid, M. E. Effect of variations in concentration of mineral nutrients on growth of turf grasses. *Bull. Green Sect. U.S. Golf. Assoc.* 13, 1933 (122-131). *B.C.A.* 53 (977).
- 635.964-1.81**—Hill, A. Fertilizer trials on lawns at Craibstone. *J. Bd. Greenh. Res.* 3, 1934 (153-160). *B.C.A.* 54 (117).
- 635.964-1.81**—Elofson, A. Sweden's aerodrome fields. *Svensk Frötidn.* 5, 1936 (43-45). *Herb. Abs.* 7 (87).
- 635.964-1.81**—Harrison, R. M. The conversion of a pasture into a cricket ground and lawn. *J. S.-E. Agric. Coll. Wye No.* 40, 1937 (148-157).
- 635.964-1.821.1**—Sprague, H. B. Liming lawn soils. *N.J. Agric. Expt. Sta. Circ.* 362, 1936 (1-4). *C.A.* 30 (7752).
- 635.964-1.841.7**—Boyns, B. M. Composts and fertilizers in relation to green keeping. VII. Concentrated fertilizers. Urea. *J. Bd. Greenh. Res.* 5, 1937 (34-37).
- 635.964-1.853**—Evans, T. W. Composts and fertilizers in relation to green keeping. VI. Basic slag. *J. Bd. Greenh. Res.* 4, 1935 (40-42).
- 635.964-1.859.1**—Boyns, B. M. Composts and fertilizers in relation to green keeping. VII. Concentrated fertilizers. Ammonium phosphate. *J. Bd. Greenh. Res.* 4, 1936 (280-283).

## FERTILIZERS AND GENERAL AGRONOMY

- 635.964-1.86**—Evans, T. W. Composts and fertilizers in relation to green keeping. (b) Miscellaneous fertilizers. *J. Bd. Greenh. Res.* 4, 1935 (104-107).
- 635.964-2.51:546.621**—Gilbert, B. E.; Pember, F. R. Tolerance of certain weeds and grasses to toxic aluminium. *Soil Sci.* 39, 1935 (425-428).
- 635.964-2.51-1.81**—Sprague, H. B. Crab grass control on lawns. *N.J. Agric. Expt. Sta. Circ.* 354, 1935 (1-4). C.A. 30 (226).
- 635.964-2.651.6**—Dawson, R. B. The earthworm as a harmful factor in turf. *J. Soc. Chem. Indust.* 56, 1937 (506-507).
- 635.964-2.954.6**—Sturkie, D. G. Control of weeds in lawns with calcium cyanamide. *J. Amer. Soc. Agron.* 29, 1937 (803-808).
- 635.975.32**—Copeland, E. B.; Collado, T. G. Crop ferns. *Philipp. J. Agric.* 7, 1936 (367-377). *Hort. Abs.* 7 (159).
- 635.975.32-1.415.1**—Woodruff, N. H. Soil acidity at the roots of some Tennessee Pteridophytes. *J. Tenn. Acad. Sci.* 11, 1936 (31-52). C.A. 30 (5339).
- 635.976-1.4**—Tincker, M. A. H. Influence of soil on growth of plants. *J. Roy. Hort. Soc.* 61, 1936 (198-208).
- 635.976-1.821.1**—Odland, T. E.; North, H. F. A.; Durham, G. B. The reaction of certain ornamental trees and shrubs to liming. *R.I. Agric. Expt. Sta. Bull.* 250, 1935, pp. 24.
- 635.98-1.4**—Corbett, W. The improvement of glasshouse soils. *Sci. Hort.* 3, 1935 (148-152).
- 635.98-1.436**—Allen, R. C. The effect of soil temperature on the growth and flowering of certain greenhouse crops. *Proc. Amer. Soc. Hort. Sci.* 31, 1934 (635-637). E.S.R. 75 (349).
- 635.98-1.811**—Laurie, A.; McElwee, E. W. A method for studying nutrient deficiencies in greenhouse crops. *Proc. Amer. Soc. Hort. Sci.* 32, 1935 (617-619).

## II. GEOGRAPHICAL BIBLIOGRAPHY

### (4) EUROPE

- (4)631.416.2**—Krügel, G.; Dreyspring, C.; Heinz, W. The supply of available phosphorus in soil and subsoil. *Ztschr. Pflanz. Düng.* 36A, 1934, (224-235). (G.)
- (410)631.4**—Kovda, V. A. The soils of Britain and their degree of cultivation. *Khim. Sotsial. Zemled.* Nos. 11-12, 1935 (27-33). (R.)
- (410)631.4**—Robinson, G. W. Soils of Great Britain. *Trans. 3rd Int. Cong. Soil Sci.* 2, 1935 (11-23).
- (410)631.4**—Shaw, C. F. Some impressions of British soils. *J. S.-E. Agric. Coll. Wye* No. 38, 1936 (27-30).
- (410)631.411.1:581.5**—Good, R. D'O.; Waugh, W. L. The vegetation of Redcliff Sand: a contribution to the ecology of the Humber. *J. Ecol.* 22, 1934 (420-428). C.A. 28 (7393).
- (410)631.44**—Crowther, E. M.; Ogg, W. G. *et al.* The soils of Britain and their classification. *Geography* 21, 1936 (106-119).
- (410)631.44**—Muir, A. The post-Congress excursion round Britain. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (264-267).

# BIBLIOGRAPHY OF SOIL SCIENCE

- (410)631.47—Stamp, L. D. The land classification scheme of the land utilization survey of Britain. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (138-140).
- (410)631.47—Stamp, L. D. Nationalism and land utilization in Britain. *Geog. Rev.* 27, 1937 (1-18).
- (411)631.4—Muir, A. The soils of Drummond Hill. *Forestry* 9, 1935 (116-123).
- (411)631.4—Ogg, W. G. The soils of Scotland. Pt. I. Introduction: the Highlands and Hebrides. *Emp. J. Expt. Agric.* 3, 1935 (174-188).
- (411)631.4—Ogg, W. G. The soils of Scotland. Pt. II. The North-Eastern region. *Emp. J. Expt. Agric.* 3, 1935 (248-260).
- (411)631.4—Ogg, W. G. The soils of Scotland. Pt. III. The Central Valley and Southern Uplands. *Emp. J. Expt. Agric.* 3, 1935 (295-312).
- (411)631.4:549—Elder, S.; McCall, R. J. S. A study on the mineral composition of the soils of South Ayrshire. *J. Agric. Sci.* 26, 1936 (1-12).
- (411) 631.415.1:581.5—Vevers, H. G. The land vegetation of Ailsa Craig. *J. Ecol.* 24, 1936 (424-445). C.A. 31 (1137).
- (411) 631.416.7—Mitchell, R. L. The base status of Scottish soils. I. The effects of lime on five typical soils from north-east Scotland. *J. Agric. Sci.* 26, 1936 (664-678).
- (411) 631.47—Snodgrass, C. P. Lanarkshire. The agricultural geography of a Scottish county. *Scot. Agric. Mag.* 53, 1937 (176-199).
- (411) 631.473—Ministry of Agriculture. Soils Correlation Committee Second Report. *Min. Agric.* 1932, pp. 149.
- (411) 631.61—Ogg, W. G. Land reclamation in Scotland. *Agric. Prog.* 14, 1937 (14-18).
- (411) 631.615—Ogg, W. G. Reclamation and cultivation of peat land in Lewis. VI. *Scot. J. Agric.* 20, 1937 (179-185).
- (411) 633.52-1.5—Stirling, J. Flax-growing in Scotland. I. Cultivation and harvesting. *Scot. J. Agric.* 20, 1937 (150-154).
- (411) 634.975-1.4—Fraser, G. K. Cairnhill plantation, Durriss. An example of variation in the rate of tree-growth resulting from differences in soil. *Forestry* 10, 1936 (110-123).
- (415) 631.416—Baird, J. C.; Common, R. H. Manurial requirement determinations by the Mitscherlich pot method. *J. Min. Agric. N. Ireland*, 5, 1937 (52-64).
- (42) 63—Keldorfer, H. Agriculture in England and Wales. *Bad. Geog. Abh.* 11, 1933, pp. 196. [G.]
- (42) 631.4—Jones, H. T. Soils of Yorkshire. *Emp. J. Expt. Agric.* 3, 1935 (270-275).
- (42) 631.4—Nicholson, H. H.; Hanley, F. Soil conditions in East Anglia. *Emp. J. Expt. Agric.* 3, 1935 (60-74).
- (42) 631.4—Ministry of Agriculture. Soils of the Bristol, Reading and West Midland Provinces and Wales. *Min. Agric. Soil Surv. Conf. Soils Correlation Ctee. Third Rept.* 1936, pp. 68. Mimeo.
- (42) 631.4—Nicholson, H. H.; Hanley, F. The soils of Cambridgeshire (excluding the Isle of Ely). *Min. Agric. Bull.* 98, 1936, pp. 88.
- (42) 631.4:581.5—Watt, A. S. Ecology of Breckland. I. Climate, soil and vegetation. *J. Ecol.* 24, 1936 (117-138). C.A. 30 (6103).

# FERTILIZERS AND GENERAL AGRONOMY.

(42) 631.44 --Davies, W. Morley ; Owen, G. Soil survey of North Shropshire. Pt. II. Classification of series and types. *Emp. J. Expt. Agric.* 2, 1934 (359-379).

(42) 631.454 ; 631.416.7--Oldershaw, A. W. A survey of 25,000 acres of land with special reference to its lack of lime. *Agric. Prog.* 13, 1936 (150-152).

(42) 631.466.1--Elliott, J. S. B. Some soil fungi of Hartlebury Common. *Proc. Bgham. Nat. Hist. Soc.* 16, 1933 (93-100).

(42) 631.47 --Stephenson, J. ; East, W. G. Berkshire. *Rept. Land Utilization Surv. Britain* No. 78, 1936, pp. 111.

(42) 631.47 --Tavener, L. E. Land classification in Dorset. *Inst. Brit. Geog. Pub.* 6, 1937, pp. 61.

(42) 631.472 --Low, A. J. Soil profiles developed on limestone on the Upper Inferior Oolite, near Douling, Somerset. *J. S.-E. Agric. Coll. Wye* No. 40, 1937 (83-91).

(42) 631.473 --Ministry of Agriculture. Soils Correlation Committee First Report. *Min. Agric.* 1931, pp. 26, with 12 Appendixes. Mimeo.

(42) 631.473 --Bane, W. A. ; Jones, G. H. Gethin. Fruit-growing areas on the Lower Greensand in Kent. A survey of the soils and fruit, 1928-1931. *Min. Agric. Bull.* 80, 1934, pp. 81.

(42) 631.473--Kay, F. F. A soil survey of the eastern portion of the vale of the White Horse. *Reading Univ. Dept. Agric. Chem. Bull.* 48, 1934, pp. 186.

(42) 631.473 --Osmond, D. A. A survey of the soils of the teart land areas of Somerset. *J. Bath and West Soc.* 9, 1935 (131-136).

(42) 631.473 --Kay, F. F. A soil survey of the University Farm, Sonning, Berks. *Reading Univ. Dept. Agric. Chem. Bull.* 49, 1936, pp. 54.

(42) 633.2.03-1.5 --Ling, A. W. The seasonal variation in the composition of some typical pastures in the south-west of England. *Rept. Third Grassland Conf. Zurich* 1934 (230-237). *Herb. Abs.* 5 (11). E.g.

(42) 633.2.03-1.5 --Ferguson, R. G. A survey of the grass land of Hertfordshire. *J. Min. Agric.* 44, 1937 (335-343).

(42) 633.52-1.5 --Gibson, W. H. Fibre-flax cultivation in the United Kingdom and the Empire. *Emp. J. Expt. Agric.* 4, 1936 (36-46).

(429) 631.4--Robinson, G. W. ; Wasowicz, T. Preliminary studies on North Welsh mountain soils. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (310-313).

(429) 631.473 --Hughes, D. O. ; Walters, W. G. D. Soil survey of Wales Progress Report, 1931-34. *Welsh J. Agric.* 11, 1935 (188-208).

(429) 631.811.4 --Williams, R. The growing danger of lime depletion in Welsh soils. *Welsh J. Agric.* 13, 1937 (246-255). E.S.R. 76 (78).

(429) 633.2.03-1.416--Walters, W. G. D. Note on the mineral content of some typical North Wales pastures. *Welsh J. Agric.* 9, 1933 (109-115). *Herb. Abs.* 3 (149).

(429) 634.9-1.4 --Long, A. P. Gwydyr forest. *Forestry* 10, 1936 (101-109).

(43) 631.4--Kivinen, E. Travel notes on soil investigation in Central Europe. *Maat. Aikak.* 8, 1936 (227-241). [Fig.]



# BIBLIOGRAPHY OF SOIL SCIENCE

- (43) 631.4 : 55—Härtel, F. Some geological facts of significance in soil formation in the sandstone mountains of Saxony. *Ztschr. Deut. Geol. Ges.* 86, 1934 (497-508). [G.]
- (43) 631.416—Edel, P. Morphological and physiological investigations of Thüringen Trias soils. *Kuhn-Arch.* 37, 1934 (91-141). *Biol. Zbl.* 6 (100). [G.]
- (43) 631.416—Ganssen, R.; Utescher, K. Evaluation of results of investigation of clay-slate and graywacke soils of Madfeld and Brilon. *Mitt. Lab. Preuss. Geol. Landesanst.* 20, 1934 (1-30). C.A. 30 (6105).
- (43) 631.416—Kuron, H. Base and nutrient ratios of a soil profile on Muschelkalk in Central Germany. *Landw. Jahrb.* 83, 1936 (585-599). [G.]
- (43) 631.416.7.8—Kling, M.; Engels, O. Recent investigations on the lime and magnesia content of different types of soils in the Palatinate. *Ernähr. Pflanze* 33, 1937 (324-325). [G.e.sp.]
- (43) 631.42—Wolff, A. C. The organization of soil investigations in Württemberg. *Ztschr. Pflanz. Düng.* 36A, 1934 (290-295). [G.]
- (43) 631.44—Mückenhausen, E. German soil types according to the present status of soil-type science. *Geol. Rdsch.* 27, 1936 (132-155). [G.]
- (43) 631.44—Mückenhausen, E. Transformations of soil types in the North German plain and in northern Lower Saxony. *Jahrb. Preuss. Geol. Landesanst.* 56, 1936 (460-516). C.A. 31 (4328).
- (43) 631.44—Arndt, M. National soil evaluation and the determination of agricultural value. *ForschDienst* 4, 1937 (167-172). [G.]
- (43) 631.44—Laatsch, W. Development tendencies and systems of German cultivated and forest soils. *Kolloid-Beih.* 46, 1937 (143-228). [G.]
- (43) 631.445.1—Krause, P. G.; Utescher, K. A new "Schwarz-erde" occurrence in East Prussia and the identification of Schwarz-erde and moor soils. *Jahrb. Preuss. Geol. Landesanst.* 55, 1934 (526-538). *Jahrb. Moork.* 1936 (44).
- (43) 631.445.12—Veltman; Brüne. Uchte moor. Investigations on the development characteristics and possibilities of a young northwest German high moor. *J. Landw.* 84, 1936 (75-84).
- (43) 631.445.3—Schucht, F.; Kuron, H. Soil formation on the rocks of the "Muschel-Kalk" formation of Central Germany. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (313-316). [G.]
- (43) 631.452—Sauerlandt, W. The humus and nutrient supply of German soils in the last ten years. *Ztschr. Pflanz. Düng.* 42, 1936 (322-336). [G.]
- (43) 631.472 : 549—Engelhardt, W. von. Mineralogical description of a Mecklenburg soil profile. *Chem. Erde* 11, 1937 (17-37). [G.]
- (43) 631.48 : 549—Edelman, C. H. Sediment petrological investigations. III. *Meded. LandbHoogeschool Wageningen* 40, 1, 1936, pp. 15.
- (43) 631.61—Merten, R. On the reclamation and afforestation of waste land in Germany. *Ztschr. Forst-u. Jagdw.* 68, 1936 (590-602). C.M.R. No. 10 (590-602).
- (43) 631.61—Ohle, W. Origin and improvement of Koog soils. *Chem.-Ztg.* 61, 1937 (509). B.C.A. 56 (953).

# FERTILIZERS AND GENERAL AGRONOMY

(44) 633.522-1.5—Krzyszowski, R. Development and possibilities of hemp culture in East and North Germany. *Forsch.-Dienst.* 2, 1936 (88-102). [G.]

(43) 634.8-1.4—Herberg; Kielhöfer; Schrader. Vineyard soils of the Moselle. I. Importance of the mechanical composition of these soils for the nutrient supply of the vine. II. Acidification of vineyard soils, its influence on growth of vines and choice of fertilizers. *Wein u. Rebe* 16, 1934 (145-151, 250-254). C.A. 30 (7264). [G.]

(43) 634.8-1.4—Herberg; Kielhöfer; Schrader. Vineyard soils of the Moselle. III. Root soluble nutrients in soils and their significance in manuring. *Wein u. Rebe* 16, 1935 (332-338). B.C.A. 55 (850). [G.]

(43) 634.8-1.4—Kling, M.; Engels, O. Investigations of the soils of vineyards in the Palatinate (Germany) (1931-35) and indicated methods of fertilizing. *Wein u. Rebe* 18, 1936 (72-88). C.A. 30 (8463).

(43) 634.9-1.4—Paeckelmann, W.; Pfeffer, P.; Udluft, A. Weathered Devonian and Carboniferous soils in North-East Sauerland. *Mitt. Lab. Preuss. Geol. Landesanst.* 18, 1934 (1-8). B.C.A. 54 (242). [G.]

(43) 634.9-1.4—Süchting, H.; Jessen, W.; Maurmann, G. Notable weathered soils of Devonian type in Taunus and Hunsrück. *Bodenk. Pflernähr.* 4, 1937 (121-137). B.C.A. 56 (1095). [G.]

(43) 634.9-1.62—Starkel, K. Improvement of Rhine valley forests in Baden. *Allg. Forst- u. Jagdztg.* 113, 1937 (169-178). C.M.R. 17 (1).

(436) 631.44 : 581.5—Schimitschek-Schreckenthal, G. The soil types and their properties along the vertical distribution boundary of tree species in the Austrian alp region. *Beih. Bot. Zbl.* 52B, 1935 (447). P.I.S. 10 (162).

(436) 631.461—Janke, A.; Wozak, M. Microbiological soil investigation in the Lunz district. II. Bacterial flora. *Arch. Mikrobiol.* 5, 1934 (338). Z.P.D. 38 (187).

(437) 631.4—Najmr, S.; Káš, V. Soils of the Devonian and Silurian formations in Bohemia. *Sborn. Čsl. Akad. Zeměd.* 10, 1935 (311-319). [Cz.g.]

(437) 631.4—Najmr, S.; Káš, V. Studies of the primary granite soils of Neu-Rolau near Karlsbad. *Sborn. Čsl. Akad. Zeměd.* 10, 1935 (319-327). [Cz.g.]

(437) 631.4—Spirhanzl, J. The organization of soil research in the Czechoslovak Republic. *Ernähr. Pflanze* 32, 1936 (319-322). [G.c.]

(437) 631.4—Spirhanzl, J.; Káš, V. Agronomic-pedological studies of soils formed in the Tertiary of Southern Bohemia, Czechoslovakia. *Sborn. Vyzkum. Ustavu Zeměd. Čsl.* 147, 1936 (114). [Cz.g.]

(437) 631.4—Spirhanzl, J. A contribution to the knowledge of meadow soils near Poděbrady. *Sborn. Čsl. Akad. Zeměd.* 12, 1937 (57-61). [Cz.g.]

(437) 631.4 : 549—Pelíšek, J. Mineral composition and mineral supply of loams of Moravian diluvium. *Sborn. Čsl. Akad. Zeměd.* 10, 1935 (88-95). [Cz.g.]

# BIBLIOGRAPHY OF SOIL SCIENCE

(437) 631.415.1—Novak, V.; Pelišek, J. The soil reaction of the fields of the School estate Zabčice belonging to the Agricultural College in Brno and its variability. *Sborn. Čsl. Akad. Zeměd.* 10, 1935 (598-603). [Cz.g.]

(437) 631.416.4—Duchon, F. Potassium content in primitive soils of Czechomorian Highlands. *Zprávy Vyzkum. Ústavu Zeměd. Čsl.* No. 68, 1935 (1-41). *Chem. Obzor*, 11 (52). C.A. 30 (3139).

(437) 631.416.7/8—Gössl, V. Magnesium and its relation to lime in Czechoslovakian soils. *Sborn. Vyzkum. Ústavu Zeměd. Čsl.* 100, 1933. Z.P.D. 37 (118). [Cz.]

(437) 631.44—Spirhanzl, J. The soil-type formations of the Detence region of Bohemia. *Sborn. Čsl. Akad. Zeměd.* 10, 1935 (302-310). [Cz.g.]

(437) 631.445.2—Pelišek, J. Classification of podzol soils on sandstones of the Upper Chalk formation of Moravia. *Sborn. Čsl. Akad. Zeměd.* 10, 1935 (604-613). [Cz.g.]

(437) 631.445.6—Novak, V.; Pelišek, J. The problem of red earth in Moravia. *Sborn. Čsl. Akad. Zeměd.* 11, 1936 (627-633). [Cz.g.]

(437) 631.46—Káš, V. Microbiological profile of soil types in the Detence region of Bohemia. *Sborn. Čsl. Akad. Zeměd.* 10, 1935 (291-302). [Cz.g.]

(437) 631.473—Mares, J. Supplementary soil maps of the estate Borčice near Turnov in Bohemia, showing the available plant nutrient content of NPK. *Sborn. Čsl. Akad. Zeměd.* 10, 1935 (613-616). [Cz.g.]

(437) 631.81—Csiky, J. Results of fertilizer experiments in 1936. *Mezőg. Kutat.* 9, 1936 (271-318). [Cz.g.]

(437) 633.289—Maloch, M. Nardeta swards in the Carpathian mountains. *Zem. Arch.* 25, 1934 (292-305). *Herb. Bot.* 5 (59). [Cz.]

(437) 634.975.1.4—Sillinger, P.; Petru, F. The microbiology and biochemistry of the soil of a forest association in the ore-bearing mountain ranges of Slovakia (Slovenské Rudohorie) with especial reference to pine woods. *Herb. Bot. Zbl.* 57A, 1937 (173-232). C.A. 31 (7159).

(438) 553.97—Grodzińska, W. The chemical composition of some peat deposits of Polesie. Part II. The peat moors of North and South-West Polesie. *Abh. Inst. Bodenk. Pulawy* 3, 1934 (151-280). P.I.S. 10 (193). [Pl.]

(438) 631.4—Swedersky, W. Investigations of the mountain soils in East Carpathia. III. The changes of Alpine soils in relation to relief. *Mém. Inst. Nat. Pol. Econ. Rur. Pulawy*, 14, 1935 (212-234). [Pl.g.]

(438) 631.411.4—Musierowicz, A.; Nowotny, F.; Jaworski, R. Study of the dynamics of Polish soils. Suppl. *Rocz. Nauk Roln.* 34, 1935 (101-112). [Pl.g.]

(438) 631.413.41—Wodsicka, M. The percentage of calcium ions in the bases absorbed by certain soils in the Cracov district. *Polska Akad. Um. Prace Roln.-Leśn.* 18, 1936, pp. 32.

(438) 631.416.2—Musierowicz, A.; Dobrzański, B. Investigation on the dynamics of Polish soils. Suppl. *Rocz. Nauk Roln.* 34, 1935 (203-211). [Pl.g.]

(438) 631.417.4—Swedersky, W. Investigations of the mountain soils in East Carpathia. IV. Investigations of the relation

# FERTILIZERS AND GENERAL AGRONOMY

between organic matter and C:N ratio in different mountain soil types. *Mém. Inst. Nat. Pol. Econ. Rur. Pulawy* 14, 1935 (235-242). [Pl.g.]

(438) 631.445.1—Tomaszewski, J. The moor soils of Polesie. *Mater. Pozn. Gleb. Polsh.* 4, 1935, pp. 192. [Pl.g.]

(438) 631.445.2—Mieczynski, T. Morphological studies of Polish podzol soils. *Abh. Bodenkn. Inst. Pulawy* 3, 1934 (281-419). [Pl.g.]

(438) 631.445.2—Staniewicz, L. Comparison of two podzol profiles at Kutno. *Doswiad. Roln.* 9, 1935 (3-12). [Pl.f.]

(438) 631.473—Terlikowski, F.; Krolkowski, L.; Kwini-chidze, M. Materials for the agricultural soil map of Poland. *Rocz. Nauk Roln.* 33, 1934 (69-82). [P.]

(438) 631.48—Swedersky, W. Investigations of the mountain soils in East Carpathia. V. Decomposition of aluminosilicate in different mountain soil types. *Mém. Inst. Nat. Pol. Econ. Rur. Pulawy* 14, 1935 (243-252). [Pl.g.]

(438) 633.2.03-1.415.1—Zbigiew, W. Investigations of the botanical composition and some chemical properties of pasture soils in Wojewodschafft Krakau. *Rocz. Nauk Roln.* 34, 1935 (287). Z.P.D. 42 (112).

(439) 631.411.1: 631.46—Fehér, D. Biochemical investigations on the sand soils of the Hungarian plain with special reference to their afforestation. *Földész. Kiseér.* 37, 1935 (57-63).

(439) 631.411.9—Sigmond, E.; Kotzmann, I. The dynamical characterization of the chief Hungarian soil types. 1. Black (dark brown) steppe soils on loess. 11. Rendzina soils. *Math. Naturw. Anz. Ungar. Akad. Wiss.* 53, 1935 (70-90, 93-110). C.A. 29 (5963).

(439) 631.415.3—Kreybig, L. v.; Endrédy, A. v. The relationship of the occurrence of alkali soils in the upper Tisza region of Hungary to the absolute elevation. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (357-360). [G.]

(439) 631.416—Fehér, D. Comparative investigations of the potash and phosphoric acid content of sandy soils on the Hungarian Plains with special reference to improving their fertility. *Ztschr. Pflanz. Düng.* 37, 1935 (26-52). [G.]

(439) 631.47—Kreybig, L. Objectives of soil assessment and soil mapping in the service of practical agriculture. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (286-290). [G.]

(439) 631.811—Rath, A. Phosphorus and potassium requirements of the soils of Northern Hungary. *Mezőg. Kutat.* 9, 1936 (171-176). [H.e.]

(44) 553.97—Chouard, P. Peat bogs and peat deposits in France. *C.R. Cong. Int. Géog. Paris, 1931*, 2, No. 2, 1933 (771-797).

(44) 631.4—Ferrière, J. F. de. The history of the soils of the loess-covered Rhine terraces. *C.R.* 200, 1935 (1227-1229).

(44) 631.4—Marcelin, P. A soil of the Gamgue Nimoise. *Bull. Assoc. Franç. Ét. Sol* 2, 1936 (174-177). [F.]

(44) 631.4—Salgues, R. The soil of Port-Cros (Var) and its parent rock. *Bull. Assoc. Franç. Ét. Sol* 2, 1936 (38-42). [F.]

(44) 631.4—Jouis, E. Silt soils of the plateaux of the lower Seine. *Bull. Assoc. Franç. Ét. Sol* 3, 1937 (121-134). [F.]

(44) 631.4: 55—Lefort, C. Agrogeological sketch of the Pas-de-Calais. *Bull. Assoc. Franç. Ét. Sol* 3, 1937 (40-57). [F.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- (44) 631.411.2—Joret, G. ; Malterre, H. The chalky soils of Picardy. *Ann. Agron.* 7 (n.s.), 1937 (61-84). [F.]
- (44) 631.411.3—Joret, G. ; Malterre, H. Soils derived from flint clays and "biels" of Picardy. *Ann. Agron.* 5 (n.s.), 1935 (16-43). [F.]
- (44) 631.411.3—Joret, G. ; Malterre, H. Soils derived from flint clays and "biels" of Picardy. *Ann. Agron.* 5 (n.s.), 1935 (507-540). [F.]
- (44) 631.411.3—Garola, J. Agronomic studies on the flint clay soils of the Eure and Loir. *C. R. Acad. Agric.* 22, 1936 (700-709).
- (44) 631.414.2—Agafonoff, V. Some considerations of the colloidal fraction of the soils of France. *C.R.* 200, 1935 (1058-1060).
- (44) 631.44—Agafonoff, V. French soils from the pedological point of view. *Soil Res.* 4, 1935 (363-379). [F.]
- (44) 631.44—Agafonoff, V. French soils from the pedological point of view. II. Azonal soils. *Ann. Agron.* 5 (n.s.), 1935 (165-189).
- (44) 631.44—Agafonoff, V. French soils from the pedological point of view. III. Azonal soils. *Ann. Agron.* 5 (n.s.), 1935 (335-372).
- (44) 631.44—Agafonoff, V. Types of soils in France and their distribution. *Cong. Int. Mines Métall. Géol. Appl. 7th Sess. Paris Geol. Sect.* 2, 1935 (597-610). C.A. 30 (8104).
- (44) 631.44—Ferrière, J. F. de. The history of the soils of the lower terraces of the Rhine, in Upper Alsace. *C.R.* 200, 1935 (842-844).
- (44) 631.44—Bordas, J. Contribution to the study of the soil types of the lower Rhone Valley. *Ann. Agron.* 7 (n.s.), 1937 (33-60). [F.]
- (44) 631.44:581.5—Blanck, E. ; Braun-Blanquet, J. ; Heukeshoven, W. Some soil profiles and their accompanying vegetation in the Montpellier district. *Chem. Erde* 9, 1934 (200-218). [G.]
- (44) 631.445.2—Joret, G. ; Malterre, H. Podzolization in the Somme Department. *Bull. Assoc. Franç. Ét. Sol* 1, 1935 (23-29). [F.]
- (44) 631.445.2—Aboville, J. d'. Forest podzol in the alluvial basin of Sologne. *Rev. Eaux et Forêts* 74, 1936 (334-338). [F.]
- (44) 631.445.2—Dremory, P. ; Drouineau, G. White and red silts. *C.R. Acad. Agric.* 22, 1936 (62-71). [F.]
- (44) 631.471—Oudin. Pedological classification and cartography of the soils of France. *C.R. Acad. Agric.* 23, 1937 (415-424). [F.]
- (44) 631.473—Agafonoff, V. Schematic soil map of France in the scale 1:2,500,000. *Bull. Assoc. Franç. Ét. Sol* 1, 1935 (37-41). [F.]
- (44) 631.48—Ferrière, J. F. de. Pedological evolution of the soils of Boulbène in the department of Gers. *Bull. Assoc. Franç. Ét. Sol* 1, 1935 (58-62). [F.]
- (44) 631.81—Lenglen. The evolution of the practice and theory of fertilizer usage throughout the ages. Eighteenth century. *Chim. Indust.* 1934, pp. 58. [F.]

# FERTILIZERS AND GENERAL AGRONOMY

- (44) 633.31-1.847.2—Demolon, A.; Dunez, A. Inoculation of lucerne seed. *J. Agric. Prat.* 98, 1934 (526-527). *Herb. Abs.* 5 (21). [F.]
- (44) 634.8-1.4—Lafforgue, G.; Riedel, C. E.; Ferrière, J. F. de. The Graves of Bordeaux. *Direction des Services Agricoles de la Gironde* 1936, pp. 111. [F.]
- (45) 631.4—Pratolongo, U. Soils of Como province. *Ann. Sper. Agrar. Roma* 14, 1934, pp. 245. [I.]
- (45) 631.4—Feruglio, D. Soils of the province of Padua. *Ann. Sper. Agrar. Roma* 20, 1936, pp. 107. [I.]
- (45) 631.4—Pantanelli, E.; Boccassini, U.; Brandonisio, V. Studies of the soils of the province of Bari. *Ann. Sper. Agrar. Roma* 22, 1937, pp. 193. [I.]
- (45) 631.4:552.323—Rigotard, L. Study of some Italian volcanic soils. *Ann. Agron.* 4 (n.s.), 1934 (770-780). [F.]
- (45) 631.4:581.5—Feruglio, D.; Cornel, A. The upper and lower plain of Western Friule between Tagliamento and Livenza. *Ann. Sper. Agrar. Roma* 13, 1934, pp. 188. [I.]
- (45) 631.4:631.81—Parravano, N. Chemical means of increasing the fertility of Italian soil. *Chim. Indust. Modena* 17, 1935 (3-9). *B.C.A.* 54 (373). [I.]
- (45) 631.416—Ugolini, R. The rocks of Tuscany as a basis for the calculation of the production of agricultural soils. I. Calcareous rocks and soils derived therefrom. II. Siliceous rocks and the soils derived therefrom. *Ist. Agrar. Pisa Boll.* 8, 1932 (1-86, 87-181). *C.A.* 27 (3686).
- (45) 631.416—Pratolongo, U.; Belingeri, B., et al. A study of the soils of the Como Province. *Ann. Sper. Agrar. Roma* 14, 1934 (1-245). *C.A.* 28 (6897).
- (45) 631.427.3—Haussmann, G. Controlling the fertility of Italian soils with the Mitscherlich method. *Ital. Agric.* 74, 1937 (45-50). [I.]
- (45) 631.445—Principi, P. Soils of Italy from the climatic point of view. *Ital. Agric.* 72, 1935 (721-731).
- (45) 631.445.6—Gaudenzi, N. Contribution to the knowledge of the terra rossa of Emilia. *Ann. Sta. Sper. Agrar. Modena* 3, 1934. *P.I.S.* 9 (208). [I.]
- (45) 631.46—Luchetti, G. New investigations of the microbiological properties of the soils of the Cornia Valley. *Ist. Agrar. Pisa Boll.* 10, 1934 (8). *P.I.S.* 10 (176).
- (45) 631.461—Bendinelli, L.; Alfieri, G. Contribution to the microbiology of the sandy soil ("Tomboli") of the Tyrrhenian coast. *Ist. Agrar. Pisa Boll.* 11, 1935 (227-230). [I.]
- (45) 631.473—Draghetti, A. Generalities on the geo-agronomic map of the Emilian plain. *Ann. Sper. Agrar. Roma* 18, 1935 (7-50).
- (45) 631.473—Draghetti, A.; Pantoli, B. et al. Geo-agronomical map of the Modena plain. *Ann. Sper. Agrar. Roma* 18, 1935 (53-187).
- (45) 631.67—Cancellara, E. An experimental irrigation installation in the "Mazzoni de Capua". *Ann. Ist. Sup. Agrar. Portici* 5, 1932 (23-61). *C.A.* 30 (3143). [I.]
- (45) 634.957—Cappuccini, G. Fixation and afforestation of the Western coast of the Upper Adriatic. *Alpe* 23, No. 11-12, 1936 (359-370). *C.M.R.* 12 (7). [F.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- (45) 634.957—Merendi, A. Various aspects of the technique of afforestation in Italy. *Alpe* 23, No. 11-12, 1936 (321-325). C.M.R. 12 (7). [F.]
- (46) 631.4—Díaz y Muñoz, J. Study of cultivated Spanish soils. *Cong. Int. Chim. Pure Appl. 9th Cong. Madrid* 7, 1934 (77-97). C.A. 30 (6865). [Sp.]
- (46) 631.4—Tamés Alarcon, C. Some characteristics of soils of Mencia (Madrid). *Cong. Int. Chim. Pure Appl. 9th Cong. Madrid* 7, 1934 (166-178). C.A. 30 (6865).
- (46) 631.43—Esteban, A. M. The chemical-agronomic study of cultivated soils of Aragón (mechanical analyses). *Bol. Inst. Invest. Agron. Madrid* 1, 1935 (205-212). C.A. 30 (5703).
- (46) 631.434—Andrés, J. A. Mechanical composition of some Spanish soils. *Cong. Int. Chim. Pure Appl. 9th Cong. Madrid* 7, 1934 (64-73). [Sp.]
- (46) 631.473—Villar, E. H. del. Soil maps of Spain and Morocco. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (132).
- (46) 634.31-1.5—Widiez, F. The culture of oranges in the Valencia region. *Potasse* No. 97, 1937 (4-7). [F.]
- (46) 63—Martínez de Bujanda, E. Survey of the recent and present position of agriculture in Portugal. *Int. Rev. Agric.* 28, 1937 (309E-321E).
- (46) 634.8-1.4—Dobby, E. H. G. Economic geography of the port wine region. *Econ. Geog.* 12, 1936 (311-323).
- (47) 553.97—Dokturovsky, V. S. Studies of the bogs of the U.S.S.R. *Pedology* No. 3, 1935 (318-322). [R.]
- (47) 631.4—Prasolov, L. I.; Antipov-Karataev, I. N.; Filippova, V. N. The soils of the Sochi station. *Trudy Gdzroiz Inst. Udob. Leningr. Lab.* 35, 1934, pp. 91. [R.e.]
- (47) 631.4—Zaitsev, A. A. Soils of the Silurian highlands and fertilizers. I. The agronomic characteristics of the soils of the Silurian highlands of the Leningrad region. *Khim. Sotsial. Zemled.* No. 5, 1935 (3-12). [R.]
- (47) 631.4—Trutnev, M. J. Two-component alluvia of the Leningrad and northern regions. *Pedology* No. 4, 1937 (513-521). [R.e.]
- (47) 631.4 : 338.98—Williams, W. R. Place of soil science in Socialist reconstruction of agriculture. *Proc. 2nd Int. Cong. Soil Sci.* 7, 1933 (67-82). [E.]
- (47) 631.4 : 338.98—Yarilov, A. A. Soil science on new lines. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (172-177). [G.]
- (47) 631.4 : 55—Sobolev, S. S. Soil-forming rocks of the Ukraine. *Pedology* No. 4, 1935 (593-603). [R.e.]
- (47) 631.4 : 551.432—Antipov-Karataev, I. N.; Antipova-Karataeva, T. F.; Simakova, L. T. Mountain-forest and mountain-meadow soils of Teberda district, North Caucasus. *Trans. Dokuchaev Inst.* 13, 1936 (367-398). [R.e.]
- (47) 631.4 : 551.432—Zakharov, S. A. The soils of the mountainous regions of U.S.S.R. *Pedology* No. 6, 1937 (810-848). [R.e.]
- (47) 631.4 : 631.67—Galkin, I. V. A soil-ameliorative characterization of the region of the sources of Eruslan. *Khim. Sotsial. Zemled.* Nos. 11-12, 1935 (94-110). [R.]
- (47) 631.411.4—Nemchinov, A. A. Classification of peat soils of the Leningrad region. *Pedology* No. 7, 1937 (676-694). [R.g.]

# FERTILIZERS AND GENERAL AGRONOMY

(47) 631.415.3—Solov'ev, P. E. Soil-forming and underlying rocks of the terrace part of the middle Transvolga region. *Pedology* No. 4, 1937 (522-534).

(47) 631.43—Ryzhov, S. N. Report on the work of the soil physics section for 1935. *Bull. SoiuzNIKHI*. 3, of 1936 (29-40). [R.e.]

(47) 631.445—Zakharov, S. A. Vertical zonality of Caucasian soils. *Pedology* No. 6, 1934 (795-821). [R.g.]

(47) 631.445: 631.811—Karpinsky, N. P. Soil science—agronomic and agrotechnical investigations on an area of 25 million hectares. *Trans. Int. Soc. Soil Sci. Soviet Sect. 4th Comm.* 1933 (26-42). [G.]

(47) 631.445: 631.811—Lebediantsev, A. N.; Borodich, D. N. Fertilizer requirements of the main soil types of the U.S.S.R. *Trans. Int. Soc. Soil Sci. Soviet Sect. 4th Comm.* 1933 (9-25). [G.]

(47) 631.445.2—Alexandrova, L. N. Soil formation on the coloured clays of Transural. *Trans. Dokuchaev Inst.* 10, 1934 (23-46). C.A. 29 (4864).

(47) 631.445.2—Antipov-Karataev, I. N.; Prasolov, L. I. Soil formation in the Sochi region on the Caucasian side of the Black Sea. *Trans. Int. Soc. Soil Sci. Soviet Sect. 5th Comm.* 1935 (70-77). [F.]

(47) 631.445.4—Prasolov, L. I.; Rode, A. A. The soils of the Middle-Ural forest steppe. *Trans. Dokuchaev Inst.* 10, No. 7, 1934. Z.P.D. 10 (68). [R.]

(47) 631.445.5—Pankov, M. A. The soils of Tadzhikistan. *Tashkent Res. Inst. Cott. Prod.* 1935 (1-128). C.A. 30 (201).

(47) 631.445.52.3—Vilensky, D. G. Geography of the saline and alkali soils in the U.S.S.R. *Trans. Int. Soc. Soil Sci. Soviet Sect. 5th Comm.* 1935 (153-167).

(47) 631.445.53—Kudrin, S. A.; Rozanov, A. N. Solonchaks soils from the Dzhirgatal State Farm (Uzbekistan). *Pedology* 30, 1935 (371-391). C.A. 30 (1483).

(47) 631.445.7—Polynov, B. B. Soils of the U.S.S.R. under Mediterranean climate, humid subtropical. *Trans. Int. Soc. Soil Sci. Soviet Sect. 5th Comm.* 1935 (29-69). [F.]

(47) 631.445.7—Sabashvili, I. N. Subtropical soils of eastern Georgia and their characteristics from the viewpoint of exploitation. *Trans. Int. Soc. Soil Sci. Soviet Sect. 5th Comm.* 1935 (78-94). [F.]

(47) 631.445.7—Sabashvili, I. N. The subtropical soils of Western Georgia. *Soviet Subtrop.* No. 4, 1934 (45-57). *Pedology* 1936 (661).

(47) 631.459—Shcheklein, S. L. Soil erosion in the Kirov region. *Eroz. Pochv. Dokuchaev Inst.* 1937 (35-56). [R.]

(47) 631.459—Sobolev, S. S. Erosion in the Ukraine. *Pedology* No. 3, 1937 (321-343). [R.e.]

(47) 631.459—Zemlianitsky, L. T. Soil erosion in mountain districts of South Kirgiz and Uzbekistan. *Eroz. Pochv. Dokuchaev Inst.* 1937 (59-67). [R.]

(47) 631.46: 631.67—Kuznetsov, S. I. Microbiological investigation of the soils of the Frunze Zonal Experiment Station. *Trudy Nauch. Inst. Udob.* No. 108, 1933 (58-67). C.A. 29 (1556).



# BIBLIOGRAPHY OF SOIL SCIENCE

- (47) 631.461—Krasilnikov, N. A. The evolutionary character of soil micro-bacteria. *Zbl. Bakt.* 90, 1934 (428-434). *Bied. Zbl.* 6 (113). [G.]
- (47) 631.461.51 : 631.445—Sushkina, N. N. Azotobacter in southern steppe soils of the U.S.S.R. *Dokuchaev Inst. Studies Genesis Geography Soils*, 1935 (159-169). *B.C.A.* 54 (1106).
- (47) 631.47—Prasolov, L. I. Review of new investigations on the geography and cartography of the U.S.S.R. *Pedology* No. 6, 1934 (730-755). [R.f.]
- (47) 631.471—Prasolov, L. I. Soil map of the U.S.S.R. in the scale of 1 : 1,000,000. *Dokuchaev Inst. Studies Genesis Geography Soils* 1935 (9-18). [F.]
- (47) 631.471—Prasolov, L. I. New map of the soil of the U.S.S.R. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (132-136). [F.]
- (47) 631.472 : 631.452—Zakharov, S. A. A study of the fertility of the deep horizons of the soil of the U.S.S.R. *Trans. Int. Soc. Soil Sci. Soviet Sect. A*, 1935 (156-166).
- (47) 631.473—Mirimanian, Kh. P. The soils of the Socialist Soviet Republic of Armenia in relation to the distribution of cultivated plants. *Pedology* No. 5/6, 1935 (841-862). [R.e.]
- (47) 631.473—Sokolovsky, A. N. The new soil map of Ukr. S.S.R. (Ukraine) 1 : 1,000,000. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (274).
- (47) 631.473—Prasolov, L. I. On the soil maps of the European part of the U.S.S.R. *Pedology* No. 6, 1937 (913-917). [R.e.]
- (47) 631.81—Rozenberg, B. S. Potassium from Solikamsk and the use of mixed fertilizers. *Kalii* No. 5, 1935 (26-33). *C.A.* 30 (1168).
- (47) 631.828—Zemtsev, M. Scientific attainments in the region of chemization. *Sotsial. Rekonstr. S. Kh.* No. 1, 1936 (210-221). [R.]
- (47) 631.84—Korolev, L. I. Agricultural-chemical evaluation of the common forms of nitrogenous fertilizers. *Miner. Udob.* 1, 1935 (75-82). *C.A.* 29 (7557).
- (47) 633.31-1.5—Kovalenko, M. P. Cultivation of lucerne in White Russia. *Probl. Zhivotnov.* No. 11, 1936 (119-132). *Herb. Abs.* 7 (208).
- (47) 633.63-1.4—Gnatovskaya, A. I. Chemical-biological characteristics of soils of the sugar-beet regions of U.S.S.R. *Sborn. Rab. VNIS*, 1936 (45-50). [R.]
- (47) 633.63-1.4—Kanivets, I. I. Soils of the sugar-beet regions of U.S.S.R. *Sborn. Rab. VNIS*, 1936 (34-41). [R.]
- (47) 633.63-1.4—Kanivets, I. I. Soils of the sugar beet districts. *VNIS*, 1936, pp.282.
- (47) 633.63-1.43—Radchenko, A. G. Agrophysical properties of soils of the sugar-beet regions of U.S.S.R. *Sborn. Rab. VNIS*, 1936 (42-44). [R.]
- (47) 633.63-1.44—Kanivets, I. I. Principles of soil classification in the sugar-beet regions of U.S.S.R. *Sborn. Rab. VNIS*, 1936 (29-33). [R.]
- (47) 633.71-1.4—Avdeeva, A. V. The soils of the tobacco-growing regions of the Pilenkov district of the Abkhazian SSR. *Sborn. Rab. Obsled. Pochv Abkhaz. Krasnodar*, 1934 (81-103). *Pedology* 1935 (887).

## FERTILIZERS AND GENERAL AGRONOMY

- (47) 633.71-1.4—Kovda, V. A. Soils of the tobacco regions, B. Sukhum district, Abkhazian S.S.R. *Trudy Inst. Opyt. Tabak. Krasnodar*, No. 112, 1934, pp. 46. *Pedology* 1935 (893).
- (47) 634.9-1.445.2—Tikheeva, L. V. Genesis and evolution of the forest soils of the Leningrad region. *Trans. Dohuchazev Inst.* 13, 1936 (267-314). [R.e.]
- (471.1) 553.97—Kivinen, E. New peat investigations in Finland. *Nord. JordbrForsk.* 5-7, 1935 (373-379).
- (471.1) 631.4—Keso, L. Most important soils in Finland and their physical properties. *Tekn. Aikakauslehti* 26, 1936 (435-438). C.A. 31 (2331).
- (471.1) 631.411.3—Salminen, A. The mechanical composition and classification of Finnish clays. *Maat. Aikak.* 9, 1937 (56-75). [Fie.]
- (471.1) 631.416—Kivinen, E. On the plant nutrient content of the mineral soils of Finland. *Maat. Aikak.* 6, 1934 (85-96). [Fi.]
- (471.1) 631.445.1—Kivinen, E. The distribution of moor soils in Finland. *Proc. Int. Soc. Soil Sci.* 12, 1937 (27-28). [G.]
- (471.1) 631.445.14—Kivinen, E. The iron carbonate moors of Finland. *Agrogeol. julk.* No. 42, 1936 pp. 16. [G.f.]
- (471.1) 631.473—Aarnio, B. Agrogeological mapping in Finland. *Nord. JordbrForsk.* 5-7, 1935 (358-361). [Sw.]
- (471.1) 631.473—Aarnio, B. Salo I. *Agrogeol. Karttoja* No. 8, 1935, pp. 46. [Fie.]
- (471.1) 631.81—Tuorila, P. Manuring with phosphate and potash in Finland. *Nord. JordbrForsk.* 5-7, 1935 (185-189). [Sw.]
- (471.1) 633.491-1.81—Tennberg, F. Potato manuring. Results of local fertilizer trials. *Valt. Maatalousk. julk.* No. 71, 1935, pp. 49. [Fig.]
- (474.2) 631.445—Nommik, A. Outline of the soils of Estonia and their genetic conditions. *Soil Res.* 5, 1936 (99-160).
- (481) 631.4—Semb, G. The soils of the Voll experimental farm. *Meld. Norges LandbrHøisk.* 15, 1935 (733-777).
- (481) 631.4—Gyland, K. The soils in Gyland and Bakke. *Meld. Norges LandbrHøisk.* 16, 1936 (118-153). [N.e.]
- (481) 631.4—Vigerust, Y. The soils at the Experiment Farm Løken with a brief survey of the soil in Øystre Slidre, Opland fylke. *Meld. Norges LandbrHøisk.* 16, 1936 (571-640). [N.e.]
- (481) 631.4—Gyland, K. Soil conditions in Lyngdalen, Anstad and Spind. *Meld. Norges LandbrHøisk.* 17, 1937 (157-186). [N.]
- (481) 631.4—Semb, G. Soil conditions in the experimental area of the Institute of Forest Research in Hirkjölén State Forest. *Medd. Norske Skogforsøksv.* 5, No. 4 1937 (537-616). C.M.R. 18 (8).
- (481) 631.415.1—Nordby, H. K. The reactions of cultivated soils in Norway. *Meld. Norges LandbrHøisk.* 16, 1936 (361-399). [N.e.]
- (481) 631.416—Bjørlykke, H. Analyses of soil profiles of northern Gudbrandsdal. *Norsk Geol. Tidsskr.* 13, 1933 (79-101). C.A. 28 (3159).
- (481) 631.445.2/3—Semb, G. Soil conditions in the experimental area of the Institute of Forest Research in the Hirkjölén State Forest. *LandbruksHøiskolen Ås* 1936 (541-616). [N.e.]
- (481) 631.81—Ødellen, M. Manuring with phosphate and potash. *Nord. JordbrForsk.* 5-7, 1935 (170-173). [N.]

# BIBLIOGRAPHY OF SOIL SCIENCE

- (481) 631.821.1—Løve, P. J. Results of liming trials in Trondelag and More. *Meld. Stat. Forsøksgård. Voll.* 21-22, 1934 (113-108). *Herb. Abs.* 4 (257).
- (481) 631.821.1—Solberg, P. (i) Lime investigations in Akershus. (ii) Contribution to the characterization of lime requirements within Akershus and Vesfold, by soil analysis. *Meld. Norges Landbr.Høisk.* 17, 1937 (331-371). [N.g.]
- (481) 633.2.03-1.81—Sakshaug, B. Pasture control at Havika, Vemundvik, Norway. *Arb. Beitebr. Norge* 12, 1936 (23-32). *Herb. Abs.* 7 (95).
- (481) 633.2.03-1.851—Sakshaug, B. Trials with finely ground crude phosphate—Nora phosphate—for pastures on boggy soil in Western Norway. *Arb. Beitebr. Norge* 11, 1934 (107-117). *Herb. Abs.* 4 (259).
- (485) 631.416.2—Arrhenius, O. The phosphate content of Scanian soils. *Sverig. Geol. Unders. Arsb.* 28, 1934, pp. 32. B.C.A. 54 (1965). [Sw.e.]
- (485) 631.416.2—Franck, O. Investigations as to the presence of easily soluble phosphoric acid in the arable land of Sweden, determined on the principles of Egner's method. *Medd. Cent.Anst. Försöksv. Jordbr.* 456, 1935, pp. 69. [Sw.e.]
- (485) 631.416.2—Franck, O. Investigations on available phosphoric acid in Swedish cultivated soils. *Kgl. Landbr.Akad. Handl. Tidskr.* No. 6, 1935. *Medd. Cent.Anst. Försöksv. Jordbr.* 456, 1935 (753-819). [Sw.e.]
- (485) 631.81—Sundelin, G.; Larson, C.; Eliasson, S. Report on the local field trials with fertilizers in Sweden in the year 1933. *Medd. Cent.Anst. Försöksv. Jordbr.* 447, 1934, pp. 341. [Sw.e.]
- (485) 631.81—Sundelin, G.; Larson, C.; Eliasson, S. Report on the local field trials with fertilizers in Sweden in the year 1934. *Medd. Cent.Anst. Försöksv. Jordbr.* 460, 1935, pp. 357. [Sw.e.]
- (485) 631.81—Sundelin, G.; Larson, C.; Eliasson, S. Report on the local field trials with fertilizers in Sweden in the year 1935. *Medd. Cent.Anst. Försöksv. Jordbr.* 463, 1936, pp. 93. [Sw.e.]
- (485) 631.81—Sundelin, G.; Larson, C.; Eliasson, S. Report on the local field trials with fertilizers in Sweden in the year 1935. Part III. Svealand and Norrland. *Medd. Cent.Anst. Försöksv. Jordbr.* 470, 1936, pp. 173. [Sw.e.]
- (485) 631.81—Sundelin, G.; Larson, C.; Eliasson, S. Report on the local field trials with fertilizers in Sweden in the year 1936. Part II. Götaland (except Malmöhuslän). *Medd. Cent.Anst. Försöksv. Jordbr.* 468, 1936, pp. 213. [Sw.e.]
- (485) 631.81—Perman, O.; Manell, E. Preliminary report on manurial, liming and leguminous crops culture investigations at the State Experiment Estate, Lanna, 1929-1935. *Medd. Cent.Anst. Försöksv. Jordbr.* 473, 1937, pp. 79. *Kgl. Landbr.Akad. Handl.* No. 2, 1937 (161-237). [Sw.g.]
- (485) 631.81—Sundelin, G.; Larson, C.; Eliasson, S. Local fertilizer experiment activities in 1935. *Medd. Cent.Anst. Försöksv. Jordbr.* 477, 1937, pp. 91.
- (485) 631.811—Larson, C. Review of phosphate and potash requirements of mineral soils in different Swedish agricultural

# FERTILIZERS AND GENERAL AGRONOMY

regions, according to local field experiments. *Nord. JordbrForsk.* 5-7, 1935 (174-184). [Sw.]

(485) 633.2.03-1.81—Hedlund, T. The meadow grasses of Sweden with special reference to their absorption of nutrient. *Swedish Grassland Society* 1936, pp. 124. *Herb. Abs.* 7 (199).

(485) 633.63-1.4—Arrhenius, O. A soil survey of the sugar beet soils in Southern Sweden. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (122-123).

(485) 634.9-1.411.1 : 549—Tamm, O. Sandy soil of low productivity on the Hökensås and in the upper Lagetal, South Sweden. *Medd. Skogsförsöksanst.* 11, 30, 1937 pp. 66. [Sw.g.]

(485) 634.9-1.62—Skogsägaren. An account of forest draining in the Jönköping district of Sweden. *Skogsägaren* 13, No. 1, 1937 (9-13). C.M.R. No. 13 (6).

(485) 634.957—Näslund, M. The afforestation research of the Swedish Forestry Experiment Station in pine forestry. *Medd. Skogsförsöksanst.* 29, 1937 (1-120). [Sw.g.]

(489) 631.81—Jensen, H. Land. Manuring with phosphate and potash. *Nord. JordbrForsk.* 5-7, 1935 (163-169). [Da.]

(492) 631.4—Hissink, D. J. The pedological characteristics of the Wieringermeer polder and that of the future Noordoofter polder. *Landbouwk. Tijdschr.* 47, 1935 (827-844). [Du.]

(492) 631.4—Hissink, D. J.; Spek, J. v. d. Study of soil samples from the Vinkeveen- and Proostij-polders and from the North Botshol polder (Utrecht Province). *Versl. Bodemk. Inst. Groningen* 42B, 1936 (261-289).

(492) 631.411.1—Kalisvaart, C. The mechanical composition and the practical valuation of a number of Dutch sea sands. *Versl. Bodemk. Inst. Groningen* 41B, 1935 (353-459). [Du.]

(492) 631.416.4 : 549—Baren, F. A. v. On the occurrence and identification of potassium containing minerals in Netherland soils. *Thesis, Wageningen* 1934, pp. 119. [Du.]

(492) 631.46—Harmen, G. W. Microbiology of Zuiderzee soils. *Landbouwk. Tijdschr.* 47, 1935 (852-875). [Du.]

(492) 631.616—Keyser, P. Pumping farm land from the sea. *Allahabad Farmer* 11, 1937 (276-281).

(492) 631.616—Watson, J. A. Scott. Some impressions of farming in Holland. *Trans. Highland Agric. Soc. Scot.* 49 (5 ser.), 1937 (46-72).

(492) 631.62—Visser, M. F. Drainage of Zuiderzee soils. *Landbouwk. Tijdschr.* 47, 1935 (845-851). [Du.]

(492) 631.81—Hissink, D. J.; Spek, J. v. d. Some results from the soil investigation of the fertilizer experiment field on sandy soil of the brothers ter Haar at Ijhorst under the direction of the experiment field commission in Overijssel. *Versl. Bodemk. Inst. Groningen* 41B, 1935 (617-634). [Du.]

(492) 631.81—Maschhaupt, J. G. The loam soil experimental field of the State Agricultural Experiment Station, Groningen, for the years 1911-1934. *Versl. RijkslandbProefsta. Groningen* 42 (14), A, 1936 (543-647). [Du.g.]

(494) 631.44—Pallmann, H. Soil formation and soil series in Switzerland. *Ernähr. Pflanze* 30, 1934 (225-234). B.C.A.A. 1934 (1198).

## BIBLIOGRAPHY OF SOIL SCIENCE

(494) 631.445.3—Geering, J. Formation of brown earth on the "molasse" of the Swiss plateau. *Landw. Jahrb. Schweiz* 50, 1936 (136-205). [G.f.]

(494) 631.811—Truninger, E.; Grünigen, F. v. How do Swiss cultivated soils stand with regard to phosphate and potash balance? *Landw. Jahrb. Schweiz* 48, 1934 (20). Z.P.D. 37 (232). [G.]

(494) 633.2.03—Kauter, A. Types of meadows and pastures in Switzerland. *Schweiz. Landw. Ztschr.* 62, 1934 (740-747). *Herb. Abs.* 5 (50). [G.]

(494) 633.2.03-1.416—Tschumi, L.; Stalé, J. Survey of the natural meadows of the Canton of Fribourg for the years 1932, 1933 and 1934. *Landw. Jahrb. Schweiz* 49, 1935 (129-146). C.A. 29 (6685). [G.]

(495) 631.4—Papoutsopoulos, J. G. Soil studies in the Sindon (Tekele) area of Macedonia. *Praktika* 8, 1933 (348-353). C.A. 29 (1190).

(495) 631.445—Liatsikas, N. The distribution of soil types in Greece. *Soil Res.* 4, 1935 (413-441). [G.e.f.]

(495) 631.445.52/4—Liatsikas, N. Formation and distribution of saline soils in the plain region of Salonika. *Praktika* 11, 1936 (251-253). [G.gr.]

(495) 631.445.52 4—Liatsikas, N. Map of the saline-soil distribution in the vicinity of Salonika. *Praktika* 11, 1936 (309-312). [G.gr.]

(495) 633.18-1.81—Nevros, K. Rice fertilizer experiments in Messenia, Greece, covering a period of 3 years. *Praktika* 9, 1934 (136). *Superphosphate* 9 (111).

(495) 633.51-1.81—Nevros, K. J.; Zarkados, D. Cotton fertilizer experiments conducted in Greece over a period of three years. *Superphosphate* 9, 1936 (201-207).

(497.1) 631.445—Stebutt, A. J. The black soils of Yugoslavia. *Ernähr. Pflanze* 32, 1936 (376-379). [G.e.]

(497.1) 631.445.7 : 631.51—Blanck, E.; Schorstein, J. Changes occurring in Istrian and Dalmatian red soils during cultivation. *J. Landw.* 84, 1936 (193-205). C.A. 31 (494). [G.]

(497.2) 631.811—Levensson, E. Comparison between field and laboratory tests of the requirements of soil. *Bull. Soc. Bot. Bulgarie* 6, 1934 (3). Z.P.D. 40 (381). [F.]

(497.2) 633.18-1.5—Levensson, E. The cultivation of rice in Bulgaria. *Ernähr. Pflanze* 33, 1937 (177-179). [G.e.]

(498) 631.445—Cernescu, N. G. Climatic and zonal soil factors in Roumania. *Inst. Geol. Român. Stud. Tech.* No. 2, Ser. C, 1934, pp. 70. [Fr.]

(498) 631.452—Ionescu-Sisesti, G.; Coiculescu, G. Investigations on the fertility of Roumanian soils. *An. Inst. Cerc. Agron. Român.* 7, 1935 (3-70). [Rm.f.]

### (5) ASIA

(51) 631.4—Yang, Shou-Chen; Tai, Yi-Chien; Yu, Shao-Chieh. The soils of the Hwai-Nan salt producing districts. *Science (China)* 18, 1934 (800-813). C.A. 29 (265).

(51) 631.4—Tang, T. Y. Soils of Kwantung Province, South China. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (316-318).

# FERTILIZERS AND GENERAL AGRONOMY

(51) 631.4—Thorp, J.; Hou, K. C. Soils of Northern and North-Western China. *Soil Bull. Peiping* No. 12, 1935, pp. 114.

(51) 631.4—Thorp, J. Geography of the soils of China. *Nat. Geol. Surv. China* 1936, pp. 552. C.A. 31 (5086). [E.]

(51) 631.4 : 551.8—Thorp, J. Soil profile studies as an aid to understanding geology. *Bull. Geol. Soc. China* 14, 1935 (359-381).

(51) 631.415.1—Li, C. K.; Lu, T. I. pH values and lime content of the soils of China. *Soil Bull. Peiping* No. 15, 1936 (1-3). C.A. 31 (7159). [E.]

(51) 631.415.3—Hseung, Y. The alkaline soil problem in China. *Chemistry (China)* 2, 1935. C.A. 30 (1920).

(51) 631.415.3—Hseung, Y. The alkaline soil problem in China. II. The formation and properties of soils rich in inorganic salts. *Chemistry (China)* 3, 1936 (763-770, 931-963). C.A. 31 (1925).

(51) 631.415.36—Peng, C.; Liu, Shih-Lin. Chemical investigation of the alkaline soils in Honan and proposals for its improvement. *Science (China)* 21, 1937 (3-15). C.A. 31 (2727).

(51) 631.44—Liu, H. A suggested system of classification and nomenclature for China's soils. *J. Agric. Assoc. China* No. 128, 1934 (27-33). [E.ch.]

(51) 631.44—Tang, T. Y. The present development of soil study in China. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (136-137).

(51) 631.445—Thorp, J. Notes on soils and human geography in China. *Amer. Soil Surv. Bull.* 16, 1935 (18-24).

(51) 631.445—Thorp, J. Geographic distribution of the important soils of China. *Bull. Geol. Soc. China* 14, 1935 (119-146).

(51) 631.445.5—Hseung, Y. A preliminary study on salted soils in China. *Soil Bull. Peiping* No. 15, 1936 (21-45). C.A. 31 (7159). [E.]

(51) 631.459 : 627.51—Eliassen, S. Possibility of Yellow River flood control by means of detention basins. *J. Assoc. Chinese Amer. Engrs.* 17, 1936 (211-230).

(51) 631.459 : 627.51—Eliassen, S. Soil erosion and river regulation with special reference to the Yellow river. *J. Assoc. Chinese Amer. Engrs.* 17, 1936 (22-38).

(51) 631.473—Pendleton, R. L.; Ch'ang, L. C. et al. Soil survey of the Tatung area, Shansi province, China. *Soil Bull. Peiping* 5, 1933, pp. 21.

(51) 631.473—Tschau, T. Y.; Li, L. C.; Chen, F. F. Soil mapping of the Chünyung district, Kiangsu, China. *Soil Bull. Peiping* 8, 1934, pp. 54. [G.]

(51) 631.473—Hou, K. C.; Chu, L. C.; Lee, L. C. A soil survey of Tingsien, Hopei Province. *Soil Bull. Peiping* 13, 1935 pp. 63.

(51) 631.473—Moyer, R. T. Soils of Shansi Province. *Soil Bull. Peiping* No. 10, 1935, pp. 40.

(51) 631.473—Pendleton, R. L.; Ch'ang, L. C. et al. A reconnaissance soil survey of the Harbin region. *Soil Bull. Peiping* 11, 1935, pp. 114.

(51) 631.473—Thorp, J. A provisional soil map of China, with notes on Chinese soils. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (275-276).

# BIBLIOGRAPHY OF SOIL SCIENCE

- (51) 631.473—Tschau, T. Y.; Chang, N. F.; Hou, K. C. Soil map of the Weiho valley, Shensi, China. *Soil Bull. Peiping* No. 9, 1935, pp. 51. [G.]
- (51) 631.473—Chieh, L. L. Soils of Yungning, Kwangsi. *Soil Bull. Peiping* 16, 1936, pp. 77.
- (51) 631.473—Thorp, J.; Tschau, T. Y. Notes on Shantung soils. A reconnaissance soil survey of Shantung. *Soil Bull. Peiping* 14, 1936, pp. 130. [E.ch.]
- (51) 631.473—Chu, L. T. A reconnaissance soil survey of Ch'engt'u area, Szechuan. *Soil Bull. Peiping* No. 18, 1937, pp. 70.
- (51) 633.61-1.5—King, R. H. Sugar-cane culture in the Delta Region of Kwantung Province, near Canton, China. *Sug. News* 15, 1934 (257-261).
- (51) 633.71-1.4—Kohnke. Tobacco culture in Shantung. *Ernähr. Pflanze* 32, 1936 (165-169). [G.]
- (51) 633.885.1—Goodrich, L. C. Cinchona in China. *China J.* 27, 1937 (36-37). C.A.S.B. 4 (2).
- (518) 553.97—Tsukunaga, K. Characteristics of peat in N. Manchuria. *S. Manchuria Rly. Co. Agric. Expt. Sta. Res. Bull.* 20, 1937 (73-77). [J.]
- (518) 631.4—Hirai, K.; Yoshida, S.; Furukawa, A. Soils of Manchukuo. I. Comparative studies of the soils in the three districts. II. The alluvial soils of the river Nun Kiang in the Tsitsihar District. III. Iron concretions in the soil of North Manchuria. *Bull. Sci. Fakult. Terkult. Kijuu Imp. Univ.* 6, 1935 (157-171). C.A. 29 (8193). [J.e.]
- (518) 631.4—Tsukunaga, K.; Tanaka, M. Studies on the productivity of the soils of Manchukuo. *S. Manchuria Rly. Co. Agric. Expt. Sta. Res. Bull.* 13, 1934 (87-114). [J.]
- (518) 631.4—Ikeda, M. Chemical nature of soils in North Manchuria. *J. Agric. Chem. Soc. Japan* 13, 1937 (348-362). B.C.A. 56 (953).
- (518) 631.416.8—Itikawa, T. Investigation of the Mn and Ti composition of Manchurian soils. *J. Sci. Soil Japan* 8, 1934 (283-296).
- (518) 631.44—Tsukunaga, K.; Ikeda, M.; Watanabe, K. Studies on the soil types of Manchukuo: the brown soils. *S. Manchuria Rly. Co. Agric. Expt. Sta. Res. Bull.* 20, 1937 (17-72). [J.]
- (518) 631.445.2—Tsukunaga, K.; Watanabe, K. On the nature of the slightly podzolized acid soil of the mountain of Changkuangtsai-lin of Chilin-Sheng. *S. Manchuria Rly. Co. Agric. Expt. Sta. Res. Bull.* 13, 1934 (65-83). [J.]
- (518) 631.445.2—Tsukunaga, K.; Watanabe, K. On the nature of the Manchurian podzolized soils in the mountain of Chinyun-Ling and of the Weiho-ling in the vicinity of Wuchimiho and Huangsungstein. *S. Manchuria Rly. Co. Agric. Expt. Sta. Res. Bull.* 19, 1937 (113-119). [J.]
- (518) 631.445.4—Tsukunaga, K.; Watanabe, K. On the nature of the chernozem (slightly degraded) and grey forest soils of Manchukuo. *S. Manchuria Rly. Co. Agric. Expt. Sta. Res. Bull.* 13, 1934 (41-63). [J.]
- (518) 631.445.51—Tsukunaga, K. On the nature of the chestnut soil in the vicinity of Manchouli and Hailaerh. *S. Manchuria Rly. Co. Agric. Expt. Sta. Res. Bull.* 13, 1934 (29-40). [J.]

# FERTILIZERS AND GENERAL AGRONOMY

- (518) 631.445.51—Tsukunaga, K.; Watanabe, K. Studies on the chestnut soil of the south province of Hsing-an. *S. Manchuria Rly. Co. Agric. Expt. Sta. Res. Bull.* 19, 1937 (121-124). [J.]
- (518) 631.445.6—Tsukunaga, K.; Watanabe, K. The terra rossa of Kuantung-chou, S. Manchuria. *J. Sci. Soil Japan* 10, 1936 (74-94). C.A. 30 (3923).
- (518) 631.445.6—Tsukunaga, K.; Watanabe, K. Studies on the terra rossa of Kuantung-chou, South Manchuria. *S. Manchuria Rly. Co. Agric. Expt. Sta. Res. Bull.* 19, 1937 (141-144). [J.e.]
- (518) 631.452—Tsukunaga, K.; Tanaka, M. Studies on the productivity of soils of Manchukuo, with a new method for the determination of the nitrogen requirement and of the soil productivity. *S. Manchuria Rly. Co. Agric. Expt. Sta. Res. Bull.* 19, 1937 (87-111). [J.]
- (518) 631.473—Tsukunaga, K. The climate, topography and the soil types of Manchukuo with a soil map of Manchukuo (scale 1:3,000,000). *S. Manchuria Rly. Co. Agric. Expt. Sta. Res. Bull.* 13, 1934 (1-27). [J.]
- (519) 631.416.1—Misue, H. The content of total nitrogen in chosen soils. *J. Sci. Soil Japan* 11, 1937 (323-336). [J.]
- (52) 631.4—Kawashima, R.; Hasegawa, T. The soil formation in the north Kyushu district of Japan. The soils formed from andesite and porphyrite. *J. Agric. Chem. Soc. Japan* 11, 1935 (1095-1109). C.A. 30 (3561).
- (52) 631.4—Kawashima, R.; Hasegawa, T. The soils formed from sedimentary and schistose rocks in the north parts of Fukuoka prefecture of Japan. *J. Agric. Chem. Soc. Japan* 12, 1936 (56-61). C.A. 30 (3924).
- (52) 631.4—Kawashima, R. On the soil formation in Okinawa Island. Part I. Clay content, reaction, exchangeable cations. *J. Sci. Soil Japan* 11, 1937 (143-154). [J.e.]
- (52) 631.4:552.323—Harada, M. Origin of Kwanto loam. *J. Agric. Chem. Soc. Japan* 11, 1935 (242-249). B.C.A. 54 (1059).
- (52) 631.4:552.323—Hosoda, K. The black soils of Japan. I. A study of their unproductiveness. *Ber. Ohara Inst.* 7, 1936 (293-319).
- (52) 631.414.2—Kawashima, R. On the soil formation in Okinawa Island. Part II. Some chemical data on colloidal clay. *J. Sci. Soil Japan* 11, 1937 (229-239). [J.e.]
- (52) 631.414.2:55—Kawamura, K.; Funabiki, S. Studies on the colloids of Middle and Western Japan. III. The analytical results of the soil colloids of various geographical and petrographical origin. *J. Sci. Soil Japan* 10, 1936 (201-215). [J.e.]
- (52) 631.414.2:631.416—Osugi, S.; Morita, S. Inorganic colloids in soils. *J. Agric. Chem. Soc. Japan* 12, 1936 (836-843). B.C.A. 55 (1114).
- (52) 631.416.2—Miyosi, M. On the salt-soluble phosphoric acid in volcanic ash soils. *J. Sci. Soil Japan* 9, 1935 (252-260). [J.]
- (52) 631.416.2—Kawamura, K.; Miyosi, M. Studies of the soil colloids of Middle and Western Japan. II. On the  $P_2O_5$  content of the colloids. *J. Sci. Soil Japan* 10, 1936 (47-52). [J.e.]
- (52) 631.44—Seki, T. On the salitic and allitic soils. *J. Sci. Soil Japan* 8, 1934 (245-256). [J.e.]



# BIBLIOGRAPHY OF SOIL SCIENCE

- (52) 631.459 : 631.61—Detwiler, B. S. Fifty years' experience gives Japan simple, effective programme (of soil conservation). *Soil Conservation* 3, No. 1, 1937 (9-10). C.M.R. 18 (11).
- (52) 631.48—Seki, T. Investigation on soil formation near the apex of the alluvial fan of Azusa River in the Central Highland of Japan proper. *J. Sci. Soil Japan* 9, 1935 (241-251). [J.]
- (52) 631.48—Kawashima, R. The soils formed from granite in the north parts of Fukuoka prefecture of Japan. The process of soil formation in Kyushu district. *J. Agric. Chem. Soc. Japan* 12, 1936 (145-150). C.A. 30 (3924).
- (52) 633.61-1.4 : 581.192—Hirano, J. The soil types in Okinawa Prefecture and their relation to the chemical composition of sugar-cane juice. *J. Sci. Soil Japan* 11, 1937 (155-162). [J.]
- (54) 552.52—Tamhane, V. A.; Iyengar, M. A. Shamu. Fertility value of the silts of the Indus. *Agric. Live-Stk. India* 6, 1936 (161-168).
- (54) 63—Viswa Nath, B. Science and practice of agriculture in India. *Twenty-fourth Indian Sci. Cong. Sect. 7*, 1937, pp. 17.
- (54) 63 : 551.5—Ramdas, L. A. Agricultural meteorology. *Ann. Rev. Biochem. and Allied Res. India* 7, 1936 (151-155).
- (54) 631.4 : 55—Wadia, D. N.; Krishnan, M. S.; Mukerjee, P. N. Introductory note on the geological foundations of the soils of India. *Rec. Geol. Surv. India* 1935 (363-391).
- (54) 631.4 : 581.5—Hoon, R. C.; Mehta, M. L. A study of the soil profiles of the Punjab plains with reference to their natural flora. *Punjab Irrig. Res. Inst. Res. Pub.* 3, No. 3, 1936, pp. 47.
- (54) 631.4 : 631.81—Sreenivasan, A. Soils, manures and fertilizers. *Ann. Rev. Biochem. and Allied Res. India* 7, 1936 (107-119).
- (54) 631.415.36—Dass, L. Ishar. Land reclamation on the lower Jhelum Canal. *Indian Engng.* 97, 1935 (23).
- (54) 631.416.1—Proceedings of the National Institute of Science of India. Symposium on the problem of nitrogen supply to Indian soils. *Proc. Nat. Inst. Sci. India* 3, 1937 (51-73).
- (54) 631.43—Puri, A. N. Soil physics. *Ann. Rev. Biochem. and Allied Res. India* 7, 1936 (146-150).
- (54) 631.445.72—Bal, D. V. Some aspects of the black cotton soils of Central Provinces, India. *Emp. J. Expt. Agric.* 3, 1935 (261-268).
- (54) 631.459—Vaugh, M. Soil conservation as a major agricultural problem. *Allahabad Farmer* 9, 1935 (58-63).
- (54) 631.459—Hamilton, A. P. F. On Siwalik erosion. *Indian Forester* 62, 1936 (375-387).
- (54) 631.459—Gorrie, R. M. Erosion survey of the Uhl Valley. *Indian Forester* 63, 1937 (218-222).
- (54) 631.459—Gorrie, R. M. The foothills grazing problem in India. *Herb. Revs.* 5, 1937 (74-78).
- (54) 631.466.1—Galloway, L. D. Indian soil fungi. *Indian J. Agric. Sci.* 6, 1936 (578-585).
- (54) 631.466.1—Chand, H. Study of the fungus flora of the, Lahore soils. *Proc. Indian Acad. Sci.* 5, 1937 (324-331).
- (54) 631.47—Agriculture and Live-Stock in India. Need for a soil survey of India. *Agric. Live-Stk. India* 7, 1937 (629-633).

## FERTILIZERS AND GENERAL AGRONOMY

- (54) 631.473—Rao, T. L. ; Balakrishnan, M. R. Soil survey of the Lower Bhavani project area. *Madras Agric. J.* 23, 1935 (64-67). B.C.A. 55 (33).
- (54) 631.51—Allan, R. G. Remarks on primary cultivation under Indian conditions with special reference to soil inversion. *Agric. Live-Stk. India* 5, 1935 (351-381).
- (54) 631.81—Cliff, A. P. Manures and manuring. *Agric. Live-Stk. India* 5, 1935 (334-343).
- (54) 631.81—Pande, I. N. Manures and fertilizers. *Allahabad Farmer* 11, 1937 (156-165).
- (54) 633.18-1.4—Mehta, M. L. The soils of the rice areas of the Gujranwala and Sheikhupura divisions of the upper Chenab canal. *Punjab Irrig. Res. Inst. Res. Pub.* 3, No. 2, 1937, pp. 25.
- (54) 633.2.03-1.583—Murari, T. Intensive manuring of pastures under local conditions. *Madras Agric. J.* 21, 1933 (164-166). *Herb. Abs.* 5 (37).
- (54) 633.51-1.445.72—Monthly Bulletin of Agricultural Science and Practice. The Indian cotton situation, 1929-35. *Mo. Bull. Agric. Sci. Pract.* 27, 1936 (405T 421T).
- (54) 633.61-1.5—Iyengar, B. N. Sugar-cane cultivation on the Irwin Canal Farm. *Mysore Dept. Agric. Gen. Ser. Bull.* 19, 1936, pp. 12.
- (54) 633.61-1.5—Ramiiah, C. V. Some aspects of sugar-cane cultivation in the Irwin Canal area. *Mysore Agric. Calendar* 1936 (13-21).
- (54) 633.71-1.4—Rao, B. S. The cultivation, curing and marketing of cigarette types of tobacco in the Guntur district. *Nagpur Agric. Coll. Mag.* 11, 1936 (9-18).
- (54) 633.71-1.5—Paul, W. R. C. Tobacco in South India. II. *Trop. Agricult.* 87, 1936 (68-75).
- (54) 633.72-1.4—Eden, T. Report on a visit to the tea districts of North-East India, 1935. *Tea Res. Inst. Ceylon Bull.* 14, 1936, pp. 42.
- (54) 634.31-1.5—Studer, E. Orange growing in Maluad. *J. Mysore Agric. Expt. Un.* 17, 1936 (61-67).
- (54) 634.573-1.5—Paul, W. R. C. The cashew nut industry of South India. *Trop. Agricult.* 87, 1936 (166-173).
- (54) 634.9-1.4—Taylor, E. M. *et al.* Soils in hill areas of Kulu Forest Division. *Indian Forest Rec.* 1 (n.s.), No. 2, 1936 (289-346).
- (548.7) 631.4—Joachim, A. W. R. ; Kandiah, S. Studies on Ceylon soils. VII. The characteristics of further important soil groups. *Trop. Agricult.* 88, 1937 (12-25).
- (548.7) 631.4—Joachim, A. W. R. ; Pandittesekere, D. G. Studies on Ceylon soils. VIII. The fernland (kekilla) and some dry and semi-dry zone soils. *Trop. Agricult.* 88, 1937 (71-85).
- (548.7) 631.44—Joachim, A. W. R. Studies on Ceylon soils. I. Modern methods of soil study and classification, and their application to Ceylon soils. *Trop. Agricult.* 84, 1935 (196-208).
- (548.7) 631.44—Joachim, A. W. R. Studies on Ceylon soils. II. General characteristics of Ceylon soils, some typical soil groups of the Island, and a tentative scheme of classification. *Trop. Agricult.* 84, 1935 (254-274).
- (548.7) 631.44—Joachim, A. W. R. ; Kandiah, S. Studies on Ceylon soils. III. The red and yellow earths, and the wet and dry patana soils. *Trop. Agricult.* 84, 1935 (323-334).

# BIBLIOGRAPHY OF SOIL SCIENCE

- (548.7) 631.44—Joachim, A. W. R. ; Pandittesekere, D. G. Studies on Ceylon soils. IV. The light sandy soils and the red dry zone and semi-humid soils. *Trop. Agrist.* 85, 1935 (21-29).
- (548.7) 631.44—Joachim, A. W. R. Some important soil groups of Ceylon. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (148-154).
- (548.7) 631.445.6—Joachim, A. W. R. ; Kandiah, S. Studies on Ceylon soils. V. Soils associated with limestone. *Trop. Agrist.* 85, 1935 (67-77).
- (548.7) 631.459—Park, M. The soil erosion questionnaire. *Trop. Agrist.* 87, 1935, pp. 12.
- (548.7) 631.459—Lester-Smith, W. C. Soil erosion. *Ceylon Dept. Agric. Bull.* 89, 1937, pp. 8.
- (548.7) 633.18-1.5—Lord, L. The cultivation of rice in Ceylon. *Emp. J. Expt. Agric.* 3, 1935 (119-128).
- (548.7) 633.18-1.81—Lord, L. Fertilizer trials with paddy in the Eastern Province. II. *Trop. Agrist.* 83, 1934 (354-355).
- (548.7) 634-1.5—Parsons, T. H. The cultivation of fruits in Ceylon, with cultural details. *Ceylon Dept. Agric. Bull.* 90, 1937, pp. 33.
- (548.7) 634.3-1.4—Joachim, A. W. R. ; Kandiah, S. Studies on Ceylon soils. IX. Some fruit soils with particular reference to citrus soils. *Trop. Agrist.* 88, 1937 (338-350).
- (548.7) 634.573-1.5—Paul, W. R. C. ; Canagaratnam, C. The production of cashew nuts in Mannar. *Trop. Agrist.* 88, 1937 (6-11).
- (548.7) 635.64-1.5—Paul, W. R. C. Tomato cultivation in the dry zone of Ceylon. *Trop. Agrist.* 85, 1935 (350-361).
- (564.3) 631.459—Pitcairn, A. Report on soil erosion in Cyprus. *Cyprus Dept. Agric. Bull.* 3, 1937, pp. 31. *Cyprus Agric. J.* 32, 1937 (35-40).
- (564.3) 633.51-1.81 Frangopoulos, A. M. Cotton experiments. *Cyprus Agric. J.* 31, 1936 (20-25).
- (569) 63—Stockdale, F. A. Report on a visit to Palestine and Trans-Jordan 1935. *C.A.C.* 247, 1935, pp. 86.
- (569) 63—Casto, E. R. Economic geography of Palestine. *Econ. Geog.* 13, 1937 (235-259).
- (569) 631.4—Puffeles, M. Preliminary survey of some soils in the Jordan Valley. *Hadar* 9, 1936 (234-239).
- (569) 631.416.8—Menchikovsky, F. Silicon, iron and aluminum supply in the nutrient medium of Palestine soils. *Hadar* 10, 1937 (175-178).
- (569) 631.811 Fertilizer, Feeding Stuffs Journal. Fertilizers in Palestine. *Fert. Feed. J.* 21, 1936 (282-283).
- (569) 633.31—Palestine. The cultivation of lucerne in Palestine. *Palestine Gaz.* No. 681 of 15th April 1937. *Agric. Suppl.* No. 16 (65-90).
- (569) 634.3-1.4—Joachim, A. W. R. Some notes on the citrus industry of Palestine. *Trop. Agrist.* 86, 1936 (323-331).
- (569) 634.3-1.4—Path, J. Better citrus crops. *Hadar* 10, 1937 (129-133). E.
- (57) 631.44—Gorshenin, K. P. Classification of the soils of Western Siberia. *Pedology* No. 6, 1934 (765-790). [R.g.]
- (57) 631.445.3—Zhukov, M. A. The brown forest soils of the Maritime Province. *Vest. Dal'necost. Fil. Akad. Nauk (U.S.S.R.)* No. 14, 1935 (180-183). R.

## FERTILIZERS AND GENERAL AGRONOMY

- (57) 631.461—Paulie, E. E. The microflora of Kazakstan sands (Central Asia). *Soil Sci.* 38, 1934 (401-406).
- (584) 631.415.36—Butkovsky, V. Improvement of heavy soils in the Murgab valley. *Pedology* No. 4, 1934 (502-519). [R.e.]
- (59) 631.4 : 552.323—Tkatchenko, B. Pedology study of the dacite soils of the province of Haut-Donnai. *Commun. Conseil Rech. Sci. Indochine* 1934, 1935, pp. 25. [F.]
- (59) 631.414.2—Clarens, J.; Lacroix, J. Soils. XVI. Two soils from Indo-China. Displaceable acid radicals and pH. Formation of clay incorrectly called "colloidal". *Bull. Soc. Chim. Fr.* 2, 1935 (1884-1892). B.C.A. 55 (163). [F.]
- (59) 633.72-1.5—Goubeaux, J. Notes on the cultivation of the tea plant in Indo-China. *Rev. Bot. Appl.* 14, 1934 (865-873). [F.]
- (59) 633.854.56-1.5—Verneuil, M. Culture of Aleurites in Indo-China. *Bull. Inst. Colon. Marseille. Mat. Grasses* 5, 1937 (123-127). B.I.L. 35 (392).
- (59) 633.91-1.4—Tkatchenko, B. Studies on the soils of the experimental station of Ong-Yem. *C.R. Trav. Inst. Rech. Agron. Indochine* 33, 1934, pp. 16. [F.]
- (591) 631.4—Aiyar, S. P. The agriculturally important soils of Burma. *Emp. J. Expt. Agric.* 4, 1936 (221-229).
- (591) 631.416.1—Aiyar, S. P. The nitrogen status of the soils of Burma. *Proc. Nat. Inst. Sci. India* 3, 1937 (259-269).
- (591) 633.61-1.4—Charlton, J. The sugar-cane soils of Burma. *Burma Agric. Surv.* No. 22 of 1935, pp. 24.
- (591) 633.61-1.473—Clark, W. M. A rough survey of suitable sugar-cane areas in Myitkyna district. *Burma Agric. Surv.* No. 21 of 1935, pp. 19.
- (591) 633.61-1.5—McLean, A. Sugar-cane in Burma. *Burma Agric. Surv.* No. 19 of 1934, pp. 66.
- (591) 633.855.335—Rhind, D. Betel-nut in Burma. *Burma Agric. Surv.* 25 of 1936, pp. 15.
- (591) 634-1.5—Grant, J. W.; Williams, A. N. P. Burma fruits and their cultivation. *Burma Dept. Agric. Bull.* 30, 1936, pp. 97.
- (591) 635.25-1.4—Maung, Ba. Onion cultivation in the Northern Circle. *Burma Dept. Agric. Bull.* 31, 1936, pp. 13.
- (593) 631.48—Blanck, E.; Credner, W.; Olderhausen, E. v. Chemical weathering and soil formation in Siam. *Chem. Erde* 9, 1935 (419-452).
- (595) 631.445.7—Albareda, J. M. The characterization of some tropical and subtropical soils. *Cong. Int. Chim. Pure Appl.* 9th Cong. Madrid 7, 1934 (74-76). Sp.]
- (595) 631.461.51—Altson, R. A. Studies on Azotobacter in Malayan soils. *J. Agric. Sci.* 26, 1936 (268-280).
- (595) 633.18-1.67—Miller, J. I. The administration of the Sungei Manik Padi Irrigation Scheme. *Malay Agric. J.* 25, 1937 (370-375).
- (595) 633.73-1.5—Lambourne, J. The cultivation of coffee at the Central Experiment Station, Serdang. *Malay Agric. J.* 24, 1936 (432-441).
- (595) 634.31-1.5—Milsum, J. N. The local mandarin orange. *Malay Agric. J.* 25, 1937 (234-238).
- (599) 633.71-1.5—Cresson. Tobacco of Vinh-Bao. *Bull. Econ. Indochine* 39, 1936 (45-66). [F.]

## BIBLIOGRAPHY OF SOIL SCIENCE

### (6) AFRICA

- (61) 631.4—Berthault. The Beni-Bahdel barrage and the Marnia plain. *C.R. Acad. Agric.* 23, 1937 (738-741). [F.]
- (61) 634.62-1.5—Micheli, A. Consideration in the cultivation of the date palm in the oases of Gialo, Augila, Guicherra and Marada, and suggestions for improved crops. *Agric. Colon.* 30, 1936 (417-427). [I.]
- (611) 631.4—Yankovitch, L. A pedological study of Tunis. *Tunisie Agric.* 36, 1935 (81-113). *Ann. Agron.* 5 (722).
- (611) 631.4—Agafonoff, V. Crusted brown and red Tunisian soils. *C.R.* 202, 1936 (1597-1599). [F.]
- (611) 631.44—Agafonoff, V. The carbonate crust and the soil types of Tunis. *Bull. Assoc. Franç. Ét. Sol* 2, 1936 (260-276). [F.]
- (611) 631.44—Agafonoff, V. The soil types of Tunis. *C.R.* 202, 1936 (2000-2002). [F.]
- (611) 631.445—Agafonoff, V. Notes on Tunisian soils. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (137-138). [F.]
- (612) 634.55-1.5—Cairano, V. D. Culture of the almond tree in Tripolitania. *Agric. Colon.* 31, 1937 (41-58).
- (612) 634.957—Vivoli, G. Some observations on reforestation in Tripoli. *Boll. Off. Agrar. Tripolit.* 2, 1933 (81-89). *Biol. Abs.* 8 (2040).
- (614) 631.445.6—Principi, P. On some terra rossas of Cyrenaica. *Ital. Agric.* 73, 1936 (13-19). [I.]
- (62) 552.52—Mosseri, V. M. Study of the Nile waters and silt. *Bull. Un. Agric. Egypte* 34, 1936 (123-132).
- (62) 552.52—Mosseri, V. M. Study of Nile waters and silt. Pt. II. *Bull. Un. Agric. Egypte* 34, 1936 (338-345). [F.]
- (62) 631.4—Yarilov, A. A. The soils of Egypt in ancient and modern times. *Pedology* No. 1, 1937 (14-32). [R.e.]
- (62) 631.416.2—Mahmoud, A. Preliminary investigations on the phosphoric acid supply in the soils of the Bahitim permanent experiments. *Roy. Agric. Soc. Cairo Chem. Sect. Bull.* 20, 1934, pp. 47. *Herb. Abs.* 6 (37).
- (62) 631 423.3 : 631.811—Shalaby, A. Investigation of the phosphoric acid and potash requirements of some Egyptian soils by a comparison of laboratory and pot tests. *Thesis, Landw. Hochsch. Berlin* 1932. *Bied. Zbl.* 64 (106). [G.]
- (62) 633.51-1.4—Norris, P. K. Cotton production in Egypt. *U.S.D.A. Tech. Bull.* 451, 1934, pp. 42.
- (624) 631.4—Greene, H. Soil problems in the Sudan. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (350-353).
- (624) 631.4—Greene, H. Soil problems of the Anglo-Egyptian Sudan. *Emp. J. Expt. Agric.* 5, 1937 (1-10). *C.A.* 31 (2331).
- (624) 631 445 7—Morison, C. G. T. Some observations on the soils of tropical Africa. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (141-143).
- (624) 631.452—Barritt, N. W. Soil fertility in the Sudan Gezira. *Emp. Coll. Grow. Rev.* 12, 1935 (111-116).
- (624) 631.62—Balls, W. L. Drainage in the Sudan Gezira. *Emp. Coll. Grow. Rev.* 12, 1935 (32-37).
- (624) 631.62—Dempster, G. H. Drainage in the Sudan Gezira. *Emp. Coll. Grow. Rev.* 12, 1935 (117-118).

# FERTILIZERS AND GENERAL AGRONOMY

(624) 631.62—Greene, H.; Bailey, M. A. Drainage in the Sudan Gezira. *Emp. Coll. Grow. Rev.* 12, 1935 (208-215).

(624) 631.67—Kenchington, F. E. Types of agriculture in the Northern Sudan. *Trop. Agric. Trin.* 12, 1935 (235-239).

(624) 633.51-1.445.72—Kenchington, F. E. Relationships of roots, soil profile and irrigation in the Sudan. *J. S.-E. Agric. Coll. Wye* No. 36, 1935 (135-182).

(635) 633.73-1.4—Brizioli, F. The culture of coffee in the east slopes of Eritrea. *Russ. Econ. Colon.* 23, 1935 (581-599, 698-713). C.A. 30 (3566).

(64) 631.4—Chauveau. Contribution to the study of Moroccan soils. *Assoc. Franç. Avance. Sci. Cong. Rabat 1934*, 1935 (263-264). *Ann. Agron.* 5 (725).

(64) 631.4—Malychéff, V. Soils of Western Morocco: brown soils formed from hamri. *C.R.* 203, 1936 (1532-1534). C.A. 31 (1539). [F.]

(649) 631.4—Ferrière, J. F. de. Soils and crops of the Canary Islands. *Rev. Bot. Appl.* 14, 1934 (492-504). C.A. 29 (265). [F.]

(649) 631.4—Krügel, C.; Dreyspring, G.; Knapp, W. H. C. Experiments carried out by the Hamburg Agricultural Experimental Station. 46. Nutritive content and reaction conditions of soils of the Canary Islands. *Superphosphate* 10, 1937 (61-77, 81-90).

(65) 631.4 : 581.5—Killian, C.; Dubuis, A. Edaphic conditions determining the distribution of rock vegetation of the Mitidjien Atlas. *Rev. Gén. Bot.* 48, 1936, pp. 19. [F.]

(65) 631.46—Killian, C. A study of the soil biology of the Algerian plateau. *Ann. Agron.* 6 (n.s.), 1936 (595-614). [F.]

(65) 631.46 : 581.5—Killian, C. Studies on the biology of the Algerian High Plateaux. *Ann. Agron.* 7 (n.s.), 1937 (207-248). [F.]

(65) 631.461—Killian, C. Biology of the soils of the high Algerian plateaux. II. *Ann. Agron.* 6 (n.s.), 1936 (702-722). [F.]

(65) 631.461—Killian, C. Studies on the biology of soils on the high Algerian plateaux. II. *Ann. Agron.* 7 (n.s.), 1937 (336-369). [F.]

(65) 631.467.1—Varga, L. Studies on the protozoan fauna of certain Sahara soils of the Algerian plateaux. *Ann. Inst. Pasteur* 56, 1936, pp. 23. [F.]

(65) 633.11-1.5—Pionnier, H. Wheat culture on the Algerian High Plateaux. *Thesis, Univ. Alger. Fac. Sci.* No. 1, 1937, pp. 188.

(65) 635-1.5—Siro, A.; Goucher, G. Culture of early vegetables on dry land on the Algerian littoral. *Ann. Agron.* 6 (n.s.), 1936 (427-433). [F.]

(661) 631.445.73—Reformatsky, N. Laterites and ferruginous rocks of western French Niger Colony. *Bull. Soc. Géol. Fr.* 5, 1936 (575-589). C.A. 30 (7509).

(661) 631.46—Killian, C.; Fehér, D. Investigations on the micro-biological phenomena of Sahara soils. *Ann. Inst. Pasteur* 55, 1935 (573-623). [F.]

(661) 634.3-1.4—Chevalier, A. Acclimatization of citrus in (French) tropical Africa. *Rev. Bot. Appl.* 15, 1935 (658-675). *Hort. Abs.* 6 (52).

(663) 631.43 : 581.5—Trochain, J. Some characteristic physical properties of the soils of Senegal. *Bull. Assoc. Franç. Ét. Sol* 2, 1936 (187-192). [F.]

## BIBLIOGRAPHY OF SOIL SCIENCE

- (665.2) 631.615—Ferrière, J. F. de; Jacques-Félix, H. Utilization of Rana marshes in French Guinea. *Rev. Bot. Appl.* 16, 1936 (105-123). *Hort. Abs.* 7 (68). [F.]
- (665.8) 631.4—Chevalier, A. Cape Verde Islands. *Rev. Bot. Appl.* 15, 1935 (733-1090). [F.]
- (669) 631.433.2 : 631.415.1—Doyle, H. C. A note on the acidity of mangrove swamp soils. *Trop. Agric. Trin.* 14, 1937 (286-287).
- (669) 631.459—Grasovsky, A. Anti-erosion and anti-desiccation operations in Nigeria. Notes of two lectures delivered at the Imperial Forestry Institute, 1937, pp. 9. *C.M.R.* 15 (6).
- (669.9) 633.74-1.4—Schwarz, L. J. Cocoa in Fernando Po. *Bull. Off. Int. Choc. Cacao* 4, 1934 (11-34). *Biol. Abs.* 10 (1763). [F.]
- (675) 631.4—Schoep, A. The bituminous soils of the Kahoezi. *Natuurwet. Tijdschr.* 19, 1937 (83-85). *C.A.* 31 (5494).
- (675) 631.416—Baeyens, J. Note on the physico-chemical composition of the soils of Kisantu (Inkisi) and their lime requirements. *Bull. Congo Belge* 25, 1934 (271-275). [F.]
- (675) 631.452—Baeyens, J. The fertility of the Belgian Congo soils. *Cong. Int. Tech. Chim. Indust. Agric. 4th Cong. Brussels* 2, 1935 (289-292). *C.A.* 30 (4964).
- (675) 631.452—Baeyens, J. Study of the fertility of Belgian Congo soils. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (129-131). [F.]
- (675) 633.524.33-1.5—Groof, G. de. Culture and exploitation of fibre plants in the Leopoldville province. *Bull. Agric. Congo Belge* 27, 1936 (548-577). *B.I.T.* 35 (257). [F.]
- (676) 631.4—Milne, G. et al. A short geographical account of the soils of East Africa. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (270-274).
- (676) 631.44—Vageler, P. East African soil types. *Ernähr. Pflanze* 31, 1935 (142-150).
- (676) 631.44 : 581.5—Milne, G. Note on soil conditions and two East African vegetation types. *J. Ecol.* 25, 1937 (255-258).
- (676) 631.459—Jones, G. H. Gethin. Reconnaissance survey of the severity and extent of soil erosion. *Proc. 2nd Conf. E. Afric. Agric. Chem.* 1934, 1935 (62-63).
- (676) 631.471—Milne, G. Statement on the present position of the project for an East African soil map. *Proc. 2nd Conf. East Afric. Agric. Chem.* 1934, 1935 (43-45).
- (676) 631.473—Hardy, F. A soil map of East Africa. *Trop. Agric. Trin.* 13, 1936 (245-249).
- (676) 631.473—Milne, G. et al. A provisional soil map of East Africa (Kenya, Uganda, Tanganyika, and Zanzibar) with explanatory memoir. *Amani Memoirs* 1936, pp. 34.
- (676) 633.2.03—Ball, R. S. Experimental work with crops and pastures in the Rift Valley and Molo areas of Kenya, 1934-1936. *E. Afric. Agric. J.* 2, 1937 (254-268).
- (676) 633.526.23-1.5—Lock, G. W. A study of methods of cultivating sisal in Kenya in comparison with those used in Tanganyika. *E. Afric. Agric. J.* 2, 1937 (393-396).
- (676) 633.71-1.5—Arnold, C. W. B. Some aspects of tobacco culture in Central Africa. *Emp. J. Expt. Agric.* 4, 1936 (247-254).
- (676.1) 631.471—Griffith, G. Memoir accompanying the draft map of the soils of Uganda. *Proc. 2nd Conf. East. Afric. Agric. Chem.* 1934, 1935 (46-47).

## FERTILIZERS AND GENERAL AGRONOMY

- (676.1) 631.58—Martin, W. S. ; Biggs, C. E. J. Experiments on the maintenance of soil fertility in Uganda. *E. Afric. Agric. J.* 2, 1937 (371-378).
- (676.1) 633.51-1.459—Hansford, C. G. Some effects of the development of the cotton industry on native agriculture in Uganda. *Emp. J. Expt. Agric.* 4, 1938 (81-88).
- (676.2/9) 631.4—Ball, R. S. Mixed farming in East Africa. I. Grassland and arable dairying in certain parts of Kenya. Timbora-Molo, Upper Gilgil—Thomson's Falls, Njoro—Rongai—Subukia. *E. Afric. Agric. J.* 1, 1936 (399-411).
- (676.2/9) 631.44—Jones, G. H. Gethin. Description of thirty-three soil series occurring in Kenya. *Proc. 2nd Conf. East Afric. Agric. Chem.* 1934, 1935 (58-59).
- (676.2/9) 631.459—Deck, S. F. Soil erosion in Kenya. *Trop. Agric. Trin.* 13, 1936 (57-58).
- (676.2/9) 633.2—Edwards, D. C. Observations on some pasture plants in Kenya. With suggestions for the extended trial of certain grasses. *Kenya Dept. Agric. Bull.* 1 of 1933, *Grassland* No. 1, 1933, pp. 33.
- (676.2/9) 633.2 03—Edwards, D. C. The grasslands of Kenya. I. Areas of high moisture and low temperature. *Emp. J. Expt. Agric.* 3, 1935 (153-159).
- (676.2/9) 633.2.03-1.58—Edwards, D. C. Report on grassland improvement in Kenya, 1934. *E. Afric. Agric. J.* 1, 1936 (269-277).
- (677.3) 631.46—Verona, O. Microbiological researches on several soils of Italian Somaliland. *Agric. Colon.* 28, 1934 (516-523). *C.A.* 29 (1555).
- (678) 631.4—Moreau, R. E. A synecological study of Usambara, Tanganyika Territory, with particular reference to birds. *J. Ecol.* 23, 1935 (1-43).
- (678) 631.4 Range, P. Geology of German East Africa. *Tropenpflanzer* 38, 1935 (47). *Z.P.D.* 42 (117).
- (678) 631.44—Milne, G. A sketch of soil conditions in Zanzibar and Pemba. *Proc. 2nd Conf. East Afric. Agric. Chem.* 1934, 1935 (50-52).
- (678) 631.459—East African Agricultural Journal. Preliminary notes on the soil erosion demonstration at the coffee research station, Lyamungu, Moshi. *E. Afric. Agric. J.* 1, 1935 (236-240).
- (678) 631.459 : 631.61—Harrison, E. Measures against soil erosion in Tanganyika Territory. *E. Afric. Agric. J.* 1, 1935 (14).
- (678) 633.72-1.5—Davies, R. M. Tea cultivation in the Southern Highlands of Tanganyika. *E. Afric. Agric. J.* 1, 1935 (50-54).
- (678) 633.73-1.5—Wakefield, A. J. Native production of coffee on Kilimanjaro. *Emp. J. Expt. Agric.* 4, 1936 (97-106).
- (68.01) 551 577 : 581.5—Schumann, T. E. W. ; Thompson, W. R. A study of South African rainfall secular variations and agricultural aspects. *Univ. Pretoria Ser.* 1, 28, 1934, pp. 46.
- (68.01) 63—Du Toit, A. L. Some considerations upon agriculture and mining in South Africa. *S. Afric. J. Sci.* 31, 1934 (1-24).
- (68.01) 631.4 : 581.5—Adamson, R. S. The plant communities of Table Mountain. III. A six years' study of regeneration after burning. *J. Ecol.* 23, 1935 (44-55).



## BIBLIOGRAPHY OF SOIL SCIENCE

(68.01) 631.417.4—Isaac, W. E. The organic matter content and the carbon-nitrogen ratio of South African soils of the winter rainfall area. *Trans. Roy. Soc. S. Africa* 23, 1935 (206-229). C.A. 30 (203).

(68.01) 631.417.4:631.445.5—Isaac, W. E.; Gershill, B. The organic matter content and carbon-nitrogen ratios of some semi-arid soils of the Cape Province. *Trans. Roy. Soc. S. Africa* 23, 1935 (246-254).

(68.61) 631.44:581.5—Adamson, R. S. The vegetation and flora of Robben Island. *Trans. Roy. Soc. S. Africa* 22, 1934 (279-296). *Herb. Abs.* 5 (16).

(68.01) 631.445.72—Van Der Merwe, C. R. Morphology of the South African black clays. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (301-303).

(68.01) 631.452—Ross, J. C.; Theron, J. J. Soil fertility studies in the summer rainfall areas of the Union of South Africa. *Univ. Pretoria Fac. Agric.* 1936, pp. 23. Mimeo.

(68.01) 631.459:551.511—Keet, J. D. M. Report on drift sands in South Africa. *S. Afric. Dept. Agric. Forestry Bull.* 172, 1936, pp. 35. *Farm. S. Africa* 12, 1937 (241).

(68.01) 631.51—Smuts, I. J. Factors in field crop production (with special reference to the Glen area). *S. Africa Dept. Agric. Bull.* 147, 1935, pp. 55.

(68.01) 633.1-1.81—Rood, E. Manuring of grain lands. *Farm. S. Africa* 12, 1937 (231-232).

(68.01) 633.2/3-1.531.2—Du Toit, J. J. Sowing chart for the Transvaal. *Farm. S. Africa*, 9, 1934 (353-363). *Herb. Abs.* 5 (47).

(68.01) 633.2 1.4—Pentz, J. A. South African pasture grasses together with a survey of the work on Prinshof Pasture Experiment Station. *Union S. Africa Dept. Agric. Bull.* 148, 1935, pp. 28.

(68.01) 633.2.03—Hall, T. D. South African pastures: retrospective and prospective. *S. Afric. J. Sci.* 31, 1934 (59-97).

(68.01) 633.2.03—Henrici, M. An investigation of pastures in the Eastern Province and in the Albany District. *S. Africa Dept. Agric. Sci. Bull.* 134, 1934, pp. 36.

(68.01) 633.2.03—Hall, T. D.; Moses, D.; Murray, S. M. The botanical composition of exotic pastures in South Africa. *S. Afric. J. Sci.* 32, 1935 (197-204).

(68.01) 633.2.03—Robb, R. L. Grassland development in South Africa. *Univ. Pretoria Agric. Ser.* 1, 36, 1936, pp. 43.

(68.01) 633.2.03-1.4—Henrici, M.; Potter, P. E. An investigation of pastures in the Eastern Province and in the Albany District. *S. Africa Dept. Agric. Sci. Bull.* 134, 1934, pp. 33. C.A. 29 (1555).

(68.01) 633.2.03-1.4—Henrici, M.; Potter, P. E.; Pont, J. W. Fodder plants of the broken veld (Fauresmith district), their chemical composition, palatability and carrying capacity. *S. Africa Dept. Agric. Sci. Bull.* 142, 1935, pp. 81. C.A. 31 (473).

(68.01) 633.2.03-1.58—Coetzee, P. J. S. Veld management in the Karroo. *Farm. S. Africa* 11, 1936 (285-286).

(68.01) 633.2.03-1.583—Moses, D. Experiments with improved pastures in the Coastal belt. Part II. *S. Afric. J. Sci.* 31, 1934 (299-314).

## FERTILIZERS AND GENERAL AGRONOMY

- (68.01) 633.31—Turpin, H. W. ; McKellar, D. W. Lucerne in South Africa. I. Distribution and cultural methods. *Farm. S. Africa* 12, 1937 (242-246).
- (68.01) 633.51-1.5—Gutsche, D. E. A. Cotton farming along the Orange River. *Farm. S. Africa* 10, 1935 (375-376).
- (68.01) 633.61-1.81—International Sugar Journal. Fertilizer problems in South Africa. *Int. Sug. J.* 39, 1937 (381).
- (68.01) 633.73-1.4—Moerdyk, J. L. Coffee production in the Union. *Farm. S. Africa* 10, 1935 (239-240). *Herb. Abs.* 5 (174).
- (68.01) 634.3-1.4—Morris, A. A. A review of soil conditions and grove practices at the Premier Citrus Estate, Umtali. *Brit. S. Africa Co. Pub.* 3, 1934 (35-63).
- (68.01) 634.3-1.5—Marloth, R. H. The citrus industry in South Africa. *Emp. J. Expt. Agric.* 5, 1937 (154-161). *Hort. Abs.* 7 (240).
- (68.01) 634.8-1.5—Hugo, F. C. Cultivation of vineyards along the Orange River. *Farm. S. Africa* 12, 1937 (275-276). *Hort. Abs.* 7 (208).
- (689.1) 633.71-1.5—Tarrant, R. A. Tobacco culture in Southern Rhodesia. *Queensland Agric. J.* 46, 1936 (651-669).
- (689.4) 631.4 : 581.5—Trapnell, C. G. ; Clothier, J. N. The soils, vegetation and agricultural systems of North Western Rhodesia. *N. Rhod. Rep. Ecol. Surv.* 1937, pp. 81.
- (689.4) 631.44 : 581.5—Trapnell, C. G. A vegetational grouping of soils in Northern Rhodesia. *Proc. 2nd Conf. East Afric. Agric. Chem.* 1934, 1935 (53-55).
- (689.4) 631.44 : 581.5—Trapnell, C. G. Ecological methods in the study of native agriculture in Northern Rhodesia. *Kew Bull.* 1, 1937 (1-10).
- (689.7) 631.47—Hornby, A. J. W. ; Maxwell, W. A. Summary of the results of the Agricultural survey of Central Nyasaland. *Nyasaland Protectorate* [1934 ?]
- (689.7) 633.71-1.5—Arnold, C. W. B. The Nyasaland tobacco industry. *Emp. J. Expt. Agric.* 3, 1935 (379-383).
- (691) 631.4—Besairie, H. The soils of Madagascar. *Soil Res.* 5, 1937 (200-221). [F.]
- (691) 631.44—Besairie, H. The principle types of soil of Madagascar. *Cong. Int. Mines Métall. Géol. Appl. 7th Sess. Paris, Sect. 2*, 1935 (621-627). C.A. 30 (8461).
- (691) 631.48—Besairie, H. Weathering of rocks and formation of the soils of Madagascar. *Bull. Assoc. Franç. Ét. Sol* 3, 1937 (15-20). [F.]
- (691) 633.71-1.5—Trochain, J. Tobacco production in the French Colonies. *Rev. Int. Tabacs*, 12, 1936 (129-138).
- (698.2) 631.4 : 581.5—Vaughan, R. E. ; Wiehe, P. O. Studies on the vegetation of Mauritius. I. Preliminary survey of the plant communities. *J. Ecol.* 25, 1937 (289-343).
- (698.2) 631.413.4—Craig, N. Base exchange relationships in Mauritius soils. *Mauritius Sugarcane Res. Sta. Bull.* 9, 1935, pp. 24. [F.f.]
- (698.2) 631.452—Craig, N. Soil fertility studies with Mauritius soils. *Proc. Int. Soc. Sug. Cane Tech.* 5, 1935 (609-616).
- (698.2) 633.2.03-1.4—Wiehe, P. O. A preliminary survey of the grazing lands of Mauritius with notes on the cattle industry of the Island. *Mauritius Dept. Agric. Bull.* 22, 1937, pp. 37.

## BIBLIOGRAPHY OF SOIL SCIENCE

(698.2) 633.61-1.4—Craig, N. Some properties of the sugarcane soils of Mauritius. *Mauritius Sugarcane Res. Sta. Bull.* 4, 1934, pp. 35.

(698.2) 633.61-1.4—Craig, N. Sugarcane in Mauritius. *Mauritius Sugarcane Res. Sta. Bull.* 11, 1937, pp. 41.

(698.2) 633.61-1.81—Villiers, O. d'H. de. Manure or chemical fertilizers. *Rev. Agric. Maurice* 76, 1934 (111-121). F.A.S. 1930 (32)

### (7) NORTH AMERICA

(7) 631.4—Vilensky, D. G. North and South American soils. *Pedology* No. 4, 1936 (562-587). [R.e.]

(71) 63:551.5—Hopkins, J. W. Agricultural meteorology: some characteristics of air temperature in Alberta and Saskatchewan. *Canad. J. Res.* 15, 1937 (461-491).

(71) 631.459:631.61—Hopkins, E. S. Soil conservation programs in the United States and Canada. *Sci. Agric.* 17, 1937 (265-269).

(71) 631.473—Ellis, J. H. Report on the soil zone map of Canada. *Trans. 3rd Int. Cong. Soil Sci.* 1, 1935 (266).

(71) 631.5—Hopkins, E. S. Major problems in field husbandry. *Sci. Agric.* 17, 1937 (754-760).

(71) 633.71-1.5—MacRae, N. A. Tobacco growing in Canada. *Canada Dept. Agric. Bull.* 176 (n.s.), 1935, pp. 45.

(71) 633.88-1.5—Adams, J. Medicinal plants and their cultivation in Canada. *Canada Dept. Agric. Pub.* 484, 1936; *Farm Bull.* 4, pp. 292. *Hort. Abs.* 6 (272).

(71) 634.76-1.5—Davis, M. B.; Gilliatt, F. C.; Harrison, K. A. The cranberry industry and its possibilities in Canada. *Canada Dept. Agric. Bull.* 180 (n.s.), 1935, pp. 34.

(711) 631.47—Laird, D. G.; Kelley, C. C. Soil survey: a basis for land utilization in British Columbia. *Sci. Agric.* 15, 1935 (257-262).

(711) 635-1.5—Woods, J. J. Vegetable growing in the coast area of British Columbia. *Canada Dept. Agric. Pub.* 572, 1937, pp. 38.

(712) 631.411.3—Johnston, W. A. Origin and characteristics of the Red River Valley and Regina Plain clay soils of Western Canada. *Sci. Agric.* 15, 1935 (268-275).

(712) 631.411.4—Walker, K. H. Composition of some Alberta peats. *Sci. Agric.* 16, 1936 (499-502).

(712) 631.411.4:631.81—Newton, J. D. Composition and fertilization of Alberta peats. *Sci. Agric.* 16, 1936 (245-251).

(712) 631.416.2—Odymsky, W. Solubility and distribution of phosphorus in Alberta soils. *Sci. Agric.* 16, 1936 (652-664).

(712) 631.436—Thomson, W. A. Soil temperatures at Winnipeg, Manitoba. *Sci. Agric.* 15, 1934 (209-217).

(712) 631.44—Ellis, J. H. Soil types occurring in the Red River Valley plain. *Sci. Agric.* 15, 1935 (276-286).

(712) 631.461—Timonin, M. I. The micro-organisms in profiles of certain virgin soils in Manitoba. *Canad. J. Res.* 13, 1935 (32-36).

(712) 631.466.1—Bisby, G. R.; Timonin, M. I.; James, N. Fungi isolated from soil profiles in Manitoba. *Canad. J. Res.* 13, 1935 (47-65).

## FERTILIZERS AND GENERAL AGRONOMY

(712) 631.466.3—Lowe, C. W.; Moyse, H. V. An investigation of some Manitoba soils for the presence of soil algae. *Trans. Roy. Soc. Canada* 28 (third ser.), 1934 (119-152).

(712) 631.47—Mitchell, J.; MacFarlane. Remarks on the utilization of the soil survey and some data regarding the soils of Saskatchewan. *Sci. Agric.* 15, 1935 (263-267).

(712) 631.473—Wyatt, F. A. Preliminary soil survey of the Peace River—High Prairie—Sturgeon Lake area. *Alberta Soil Surv. Div. Rept.* 31, 1935, pp. 28.

(712) 631.473—Joel, A. H.; Mitchell, J.; Edmunds, F. H. et al. Reconnaissance soil survey of Saskatchewan. *Saskatchewan Soil Surv. Rept.* 10, 1936, pp. 120.

(712) 631.473—Scientific Agriculture. Report of the variety zone co-ordination Committee of the Western Canadian Society of Agronomy. *Sci. Agric.* 17, 1936 (260-262).

(712) 633.11-1.445.2—Aamodt, O. S.; McCalla, A. G. Quality and keeping properties of flour from wheat grown on the black and grey soils of Alberta. *Canad. J. Res.* 13, 1935 (160-167).

(712) 633.2/3-1.5—Buckley, G. F. H. Forage crop management on the black soils and in the aspen grove belt of Western Canada. *Herb. Revs.* 4, 1936 (143-147).

(712) 633.2/3-1.586—Kirk, L. E. Forage-crop improvement in Western Canada for dry-land agriculture. *Emp. J. Expt. Agric.* 4, 1936 (255-262).

(712) 633.2.03-1.4—Clarke, S. E.; Tisdale, F. W. Range pasture studies in Southern Alberta and Saskatchewan. *Herb. Revs.* 4, 1936 (51-64).

(712) 634.9-1.44—Harrison, J. D. B. Forests and forest industries of the Prairie Provinces. *Canada Dept. Int. Forest Serv. Bull.* 88, 1936, pp. 67.

(713) 631.4—Putnam, D. F.; Chapman, L. J. The physiography of south-central Ontario. *Sci. Agric.* 16, 1936 (457-477).

(713) 631.44—Ruhnke, G. N. Ontario soils and farm chemical problems. *Canad. Chem. Metall.* 19, 1935 (287-290, 292). C.A. 30 (553).

(713) 631.582—Hopkins, E. S.; Ripley, P. O.; Dickson, W. Crop rotations and soil management for Eastern Canada. *Canada Dept. Agric. Bull.* 163 (n.s.), 1935, pp. 67.

(713) 633.2/3—McConkey, O. The origin and ecological adaptation of the agricultural grasses, clovers and alfalfa of Eastern Canada. *Herb. Revs.* 3, 1935 (185-192).

(714) 553.97—McKibbin, R. R.; Atkinson, H. J.; Boone, C. S. Some peat bog profiles of the lower St. Lawrence River and Lake St. John regions in Quebec. *Sci. Agric.* 16, 1936 (253-260).

(714) 631.411.4—McKibbin, R. R.; Stobbe, P. C. Organic soils of South-western Quebec. *Canada Dept. Agric. Pub.* 499, *Tech. Bull.* 5, 1936, pp. 74.

(714) 631.445.2—Atkinson, H. J.; McKibbin, R. R. Chemical studies on Appalachian upland podsol soils. *Canad. J. Res.* 2, 1934 (759-769).

(714) 631.471—McKibbin, R. R. Soil survey work in Quebec. *Quebec Dept. Agric. J. Agric.* 39, 1936.

# BIBLIOGRAPHY OF SOIL SCIENCE

- (714) 633.2 03-1.4—Raymond, L. C. Pasture studies. VIII. Improvement of grazing lands in Eastern Canada. *Emp. J. Expt. Agric.* 4, 1936 (51-60).
- (714) 633.2.03-1.81—Raymond, L. C. Pasture studies. XI. Pasture research in Quebec. Chemical, ecological and nutritional phases. *Canad. J. Res.* 14, 1936 (394-411).
- (714) 634.11 1.44—Stobbe, P. C. Adaptation of apple orchards in Quebec to special soil types. *Sci. Agric.* 17, 1937 (329-332).
- (72) 631 416 323—Byers, H. G. Selenium in Mexico. *Indust. Engng. Chem.* 29, 1937 (1200-1202).
- (728) 631.44—Hardy, F.; Smart, H. P.; Rodríguez, G. Studies in West Indian soils. IX. Some soil types of British Honduras, Central America. *Imp. Coll. Trop. Agric. Trin.* 1935, pp. 56.
- (729) 631.4—Ballou, H. A. The Dutch Leeward Islands. *Trop. Agric. Trin.* 11, 1934 (317-320).
- (729) 631.4—Hardy, F.; Robinson, C. K.; Rodríguez, G. Studies in West Indian soils. VIII. The agricultural soils of St. Vincent. *Trinidad*, Dec. 1934, pp. 43.
- (729) 631.4—Hardy, F. Studies in West Indian soils. *Trop. Agric. Trin.* 13, 1936 (268-273).
- (729) 631.4—Duthie, D. W.; Hardy, F.; Rodríguez, G. Soil investigation in the Arena Forest Reserve, Trinidad. *Imp. Forestry Inst. Pap.* 6, 1937, pp. 16.
- (729) 631.4 : 581.5—Marshall, R. C. The physiography and vegetation of Trinidad and Tobago. *Oxford Forest. Mem.* 17, 1934, pp. 56.
- (729) 631.411.2—Bonazzi, A. Studies on the heavy limestone soils of Cuba. *Proc. Azuc. Cuban Sug. Tech. Assoc.* 8, 1934 (47-75). C.A. 30 (19.0).
- (729) 631.411.2—Saint, S. J. The coral limestone soil of Barbados. *Barbados Agric. J.* 3, 1934 (1-37).
- (729) 631.44—Hardy, F. The chief soil types of Trinidad. *Proc. Agric. Soc. Trin. Tob.* 35, 1934 (443-458).
- (729) 631.459—Porto Rico. Soil erosion control a basic reconstruction problem. *P.R. Agric. Expt. Sta. Rept.* 1935 (12). E.S.R. 75 (853).
- (729) 631.459—Croucher, H. H. Soil erosion in the Blue Mountain range. *J. Jamaica Agric. Soc.* 41, 1937 (270-271).
- (729) 631.461.3—Bonnet, J. A. Nitrification studies with soil types of Northern Puerto Rico. *J. Agric. P.R.* 19, 1935 (73-103).
- (729) 633.2—Journal of the Jamaica Agricultural Society. Pasture improvement. *J. Jamaica Agric. Soc.* 39, 1935 (645-648).
- (729) 633.61-1.4—Laparra, C. An agrological glance at Martinique and contribution to the fertilizing of sugar cane. *Cong. Int. Tech. Chm. Indust. Agric., Fourth Cong. Brussels* 2, 1935 (263-282). C.A. 30 (4974).
- (729) 633.61-1.4—McIntosh, A. E. S. Report on second visit to Antigua, April, 1935. *B.W.I. Cent. Sug. Cane Br. Sta. Bull.* 7, 1935, pp. 13.
- (729) 633.61-1.4—Turner, P. E. Recent investigations on sugar-cane and sugar-cane soils in St. Kitts. I. Preliminary results of the new experimental scheme. *Trop. Agric. Trin.* 13, 1936 (64-70).

## FERTILIZERS AND GENERAL AGRONOMY

- (729) 633.61-1.4—Turner, P. E. ; Charter, C. F. ; Warneford, F. H. S. Investigations on sugar-cane and sugar-cane soils in Antigua. I. Preliminary results of the new experimental scheme. *Trop. Agric. Trin.* 13, 1936 (19-24, 38-47).
- (729) 633.61-1.416.4—Rodríguez, G. ; Hardy, F. Available potash. *Proc. Sug. Cane Investig. Cttee. Trin.* 4, 1933 (107). C.A. 29 (1920).
- (729) 633.61-1.5—Turner, P. E. A critical review of agricultural practices on sugar estates in Antigua, with special reference to a scheme of field experiments. *Sug-Cane Investig. Cttee. of Antigua, Trinidad* 1934, pp. 22.
- (729) 633.61-1.5—Bettinger, P. Sugar cane industries in Martinique. *Bull. Assoc. Chim. Sucri.* 52, 1935 (348-365). [F.]
- (729) 633.61-2.4—Britton-Jones, H. R. Problems connected with root disease of sugar-cane in Antigua. *Trop. Agric. Trin.* 13, 1936 (5-8).
- (729) 633.74-1.4—Hardy, F. ; Rodríguez, G. Cacao soil surveys. (3) Siparia-Penal-Moruga district of Trinidad. *Fifth Ann. Rept. Cacao Res.* 1935, 1936 (30-34).
- (729) 633.74-1.4—Hardy, F. ; Duthie, D. W. ; Rodríguez, G. Studies in West Indian soils. X. The cacao and forest soils of Trinidad. (B) South-central district. *Imp. Coll. Trop. Agric. Trinidad* 1936, pp. 56.
- (729) 633.74-1.4—Shephard, C. Y. Some economic aspects of cacao production in Trinidad with special reference to the Montserrat district. *Trop. Agric. Trin.* 13, 1936 (85-90).
- (729) 633.74-1.4—Shephard, C. Y. The cacao industry of Trinidad. Some economic aspects. Series III. An examination of the effects of soil type, and age on yield. Series IV. Recommendations for improving the efficiency of estates. *Trinidad* 1937 (31-80).
- (729) 634.3-1.5—Barnes, A. C. The cultivation of citrus in Jamaica. *Jamaica Dept. Sci. Agric. Bull.* 3 (n.s.), 1934, pp. 6.
- (729) 634.771-1.4—Jack, H. W. The banana industry in Jamaica. *J. Jamaica Agric. Soc.* 39, 1935 (627-639). *Hort. Abs.* 6 (70).
- (729) 635.64-1.5—Dalgano, W. T. Tomato cultivation in the Bahamas. *Trop. Agric. Trin.* 13, 1936 (175-176).
- (73) 553.97—Dachnowski-Stokes, A. P. National objectives in the utilization of peat land in agriculture and industry. *Amer. Soil Surv. Bull.* 15, 1934 (29). E.S.R. 74 (457).
- (73) 631.422—Thomas, R. P. The use of rapid soil tests in the United States. *J. Amer. Soc. Agron.* 25, 1936 (411-419).
- (73) 631.445—Kellogg, C. E. Development and significance of the great soil groups of the United States. *U.S.D.A. Misc. Pub.* 229, 1936, pp. 40.
- (73) 631.459—McGrew, P. C. Soil erosion in the Palouse Country. *Agric. Engng.* 14, 1933 (46).
- (73) 631.459—Lowde-milk, W. G. Some aspects of research in the soil conservation service. *Soil Conservation* 1, No. 5, 1935 (1-7).
- (73) 631.459—Enlow, C. Agronomic program for erosion control. *Soil Conservation* June, 1936 (10-11, 15).
- (73) 631.459—Clayton, E. S. Soil erosion. Investigations overseas. *Agric. Gaz. N.S. Wales* 48, 1937 (181-185, 194).

# BIBLIOGRAPHY OF SOIL SCIENCE

- (73) 631.459—Clayton, E. S. Soil erosion. *Agric. Gaz. N.S.W.* 48, 1937 (243-247, 254).
- (73) 631.459—Forster, H. C. Soil erosion. *J. Dept. Agric. Victoria* 35, 1937 (434-440).
- (73) 631.459—Topham, P. Notes on soil erosion in the United States. *Imp. Forestry Inst. Pap.* 8, 1937, pp. 28.
- (73) 631.459 : 631.47—Norton, E. A. Provisional problem areas in soil conservation research. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (495-503).
- (73) 631.459 : 631.61—Science. Soil erosion control. *Science* 81, 1935 (332-333).
- (73) 631.459 : 634.9—Van Dersal, W. R. Handbook of native woody plants of the United States. *SCS-TP-11*, 1936, pp. 287.
- (73) 631.67—Agricultural Engineering. Supplemental irrigation in the humid region. *Agric. Engng.* 18, 1937 (28). E.S.R. 77 (110).
- (73) 631.811—Lipman, J. G.; Conybeare, A. B. Preliminary note on the inventory and balance sheet of plant nutrients in the United States. *N. J. Agric. Expt. Sta. Bull.* 607, 1936, pp. 23. E.S.R. 75 (752).
- (73) 633.2.03-1.445—Vinall, H. N. Pasture areas in the United States. *J. Amer. Soc. Agron.* 27, 1935 (161-172).
- (73) 633.366—Crosby, M. A. Sweet clover in Great Plains farming. *U.S.D.A. Tech. Bull.* 380, 1933 (1-53). *Biol. Abs.* 8 (2034).
- (73) 633.71-1.4—McGregor, C. J. Tobacco culture. A short report of a visit to some of the tobacco producing areas of the United States of America. *Tanganyika* 1935, pp. 24.
- (73) 633.71-1.5—Mandelson, L. F. The tobacco growing industry in the United States of America. *Queensland Agric. J.* 46, 1936 (4-25).
- (73) 633.71-1.81—Mandelson, L. F. The tobacco-growing industry in the United States of America. *Queensland Agric. J.* 45, 1936 (541-574).
- (74) 631.4 : 63—Lee, L. L. The principal soils of New Jersey and their utilization for agriculture. *N. J. Agric. Expt. Sta. Bull.* 569, 1934, pp. 16. E.S.R. 72 (14).
- (74) 631.4 : 63—Higbee, H. W. The relation of soils to human environment in the Appalachian Valley ridges of South Central Pennsylvania. *Amer. Soil Surv. Bull.* 16, 1935 (10-15).
- (74) 631.416.4—Morse, F. W. Potash in Massachusetts soils. Its availability for crops. *Mass. Agric. Expt. Sta. Bull.* 324, 1935, pp. 16.
- (74) 631.44—Howe, F. B. Classification and agricultural value of New York soils. *Cornell Agric. Expt. Sta. Bull.* 619, 1935, pp. 83.
- (74) 631.445.2—Joffe, J. S. A petiologic study of some soils in New Jersey. *Soil Sci.* 43, 1937 (221-238).
- (74) 631.47—Gustafson, A. F. Soil, field-crop and pasture management for Suffolk and Nassau Counties, New York. I. Soil and field-crop management. *Cornell Agric. Expt. Sta. Bull.* 600, 1934 (1-45). E.S.R. 72 (15).
- (74) 631.47—Howe, F. B.; Gustafson, A. F. Soil, field-crop and pasture management for Suffolk and Nassau Counties, New York. III. Soil map and soil-type descriptions. *Cornell Agric. Expt. Sta. Bull.* 600, 1934 (63-67). E.S.R. 72 (15).

## FERTILIZERS AND GENERAL AGRONOMY

- (74) 631.47—Lee, L. L. State land use programs. *Amer. Soil Surv. Bull.* 15, 1934 (85-87). E.S.R. 74 (456).
- (74) 631.58—Pearson, C. S.; Howe, F. B.; Gustafson, A. F. Soil, field-crop, pasture and vegetable-crop management for Erie County, New York. I-IV. *Cornell Agric. Expt. Sta. Bull.* 630, 1935 (5-55). C.A. 30 (1165).
- (74) 631.821.1—Prince, F. S.; Blood, P. T. Liming New Hampshire farm lands. *N. H. Agric. Expt. Sta. Circ.* 44, 1934, pp. 12. E.S.R. 71 (608).
- (74) 633.2.03-1.5—Johnstone-Wallace, D. B. Soil, field-crop, and pasture management for Suffolk and Nassau Counties, New York. II. Pasture improvement and management. *Cornell Agric. Expt. Sta. Bull.* 600, 1934 (46-62). E.S.R. 72 (37).
- (74) 633.2.03-1.58—Gustafson, A. F.; Johnstone-Wallace, D. B.; Howe, F. B. Soil, field-crop, and pasture management for Herkimer County, New York. *Cornell Agric. Expt. Sta. Bull.* 612, 1934, pp. 83. *Herb. Abs.* 5 (55).
- (74) 634.1.44—Oskamp, J. Soils in relation to fruit growing in New York. IX. Tree behaviour on important soil profiles in the Newfane-Olcott area, Niagara County. *Cornell Agric. Expt. Sta. Bull.* 653, 1936, pp. 20. E.S.R. 76 (302).
- (74) 634.1/7-1.4—Sweet, A. T. Soils of Orleans County, New York, in their relation to orchard planting. *Cornell Agric. Expt. Sta. Bull.* 637, 1935, pp. 32. *Hort. Abs.* 6 (275).
- (74) 634.1/7-1.4—Peech, M. Soils in relation to fruit growing in New York. X. Susceptibility of various New York orchard soils to reduction upon water-logging. *Cornell Agric. Expt. Sta. Bull.* 667, 1937, pp. 20. E.S.R. 77 (308).
- (74) 634.11-1.4—Sweet, A. T. The soil factor in commercial apple production in the Hudson Valley of New York. *Amer. Soil Surv. Bull.* 16, 1935 (46-48).
- (74) 634.9-1.43—Scholtz, H. F. Physical properties of the cove soils on the Black Rock Forest. *Black Rock Forest Bull.* 2, 1931, pp. 59.
- (74) 635-1.81—Mack, W. B. Fertilizing vegetable crops in Pennsylvania. *Amer. Fert. No.* 2, Jan. 23, 1937 (12-13, 24, 26).
- (74) 635.25-1.5—Beaumont, A. B.; Snell, M. E. et al. Onions in the Connecticut Valley. *Mass. Agric. Expt. Sta. Bull.* 318, 1935, pp. 31.
- (75) 631.416.2—Fisher, R. A.; Thomas, R. P. Phosphorus needs of some Maryland soils. *Md. Agric. Expt. Sta. Bull.* 362, 1934 (391-394). C.A. 30 (5704).
- (75) 631.417—Hester, J. B.; Shelton, F. A. Soil organic matter investigations upon coastal plain soils. *Va. Truck Expt. Sta. Bull.* 94, 1937 (1397-1428).
- (75) 631.44—Williams, C. B.; Lutz, J. F. North Carolina soils evaluated for crop growth. *N. C. Agric. Expt. Sta. Agron. Inform. Circ.* 94, 1935, pp. 130. E.S.R. 73 (751).
- (75) 631.44 : 631.452—Hasty, A. H. The relationship of soil character as expressed by certain soil types, to the choice of land for resettlement in the south-eastern Coastal Plain region. *Amer. Soil Surv. Bull.* 17, 1936 (81-82).
- (75) 631.445.7—Bryan, O. C. Genesis and morphology of the red soils in the south-eastern United States. *Amer. Soil Surv. Bull.* 16, 1935 (66-69).



# BIBLIOGRAPHY OF SOIL SCIENCE

- (75) 631.445.7—Journey, R. C. Morphology of the reddish-yellow soils in South-eastern United States. *Amer. Soil Surv. Bull.* 16, 1935 (57-59).
- (75) 631.459—Morris, F. G. Soil erosion in South-eastern United States. *Geog. J.* 90, 1937 (363-370).
- (75) 631.459 : 631.61—Hall, A.; R. Early erosion-control practices in Virginia. *U.S.D.A. Misc. Pub.* 256, 1937, pp. 31.
- (75) 631.459 : 631.61—Rowalt, E. M. Soil defence in the Piedmont. *U.S.D.A. Farm. Bull.* 1767, 1937, pp. 62.
- (75) 631.459 : 631.613—Farrington, F. N. Tallapoosa County's terracing program. *Agric. Engng.* 16, 1935 (313-316).
- (75) 631.46—Snow, L. M. A comparative study of the bacterial flora of wind-blown soil: IV. Shackleford Bank, North Carolina. *Soil Sci.* 39, 1935 (227-231).
- (75) 633.2.03 : 633.283—Schuster, G. L.; Phillips, C. E. Pasture investigations in Southern Delaware. *Del. Agric. Expt. Sta. Bull.* 189, 1934, pp. 32.
- (75) 633.2.03-1.416—Grau, F. V. Permanent pastures in Maryland. A survey of vegetation, soil fertility and management practices. *Md. Agric. Expt. Sta. Bull.* 373, 1935 (215-259). C.A. 29 (8195).
- (75) 633.491-1.5—Fifield, W. M. Potato growing in Florida. *Fla. Agric. Expt. Sta. Bull.* 295, 1936, pp. 48.
- (75) 633.51-1.81—Bledsoe, R. P. Fertilizing Georgia's cotton crop. *Amer. Fert.* 84, May 2, 1936 (9-11).
- (75) 634.9 : 581.144.2—Coile, T. S. Distribution of forest tree roots in North Carolina Piedmont soils. *J. Forestry* 35, 1937 (247-257). C.M.R. 15 (2).
- (75) 635-1.4—Hester, J. B.; Shelton, F. A. Comparative data for three coastal plain soils for soil characteristics and plant growth. *Va. Truck Expt. Sta. Bull.* 84, 1934 (1157-1193). C.A. 29 (8195).
- (75) 635.34-1.81—Parker, M. M. Cabbage fertilization in South-west Virginia. *Va. Truck Expt. Sta. Bull.* 88, 1935 (1237-1246).
- (76) 631.4—Fraps, G. S.; Fudge, J. F. Soils of Collin, Frio, Galveston, Midland, Potter and Van Zandt Counties and the Trans-Pecos area. *Tex. Agric. Expt. Sta. Bull.* 533, 1936, pp. 54.
- (76) 631.413.4—Fraps, G. S.; Fudge, J. F. Base-exchange properties of some typical Texas soils. *Tex. Agric. Expt. Sta. Bull.* 520, 1935, pp. 23. B.C.A. 56 (70).
- (76) 631.414.2—Davis, F. L. The chemical composition of the colloidal fractions from the major soils series of Alabama. *Amer. Soil Surv. Bull.* 16, 1935 (139).
- (76) 631.416—McBryde, J. B. The vegetation and habitat factors of the Carrizo sands. *Ecol. Monog.* 3, 1933 (247-297). C.A. 27 (5455).
- (76) 631.459—Winters, N. E. Relation of soil conservation to land utilization in the Red Plains area of Oklahoma. *Amer. Soil Surv. Bull.* 16, 1935 (131-135).
- (76) 631.459—Disker, E. G.; Yoder, R. E. Sheet erosion studies on Cecil clay. *Ala. Agric. Expt. Sta. Bull.* 245, 1936, pp. 52.
- (76) 631.459—Gibson, J. S. Soils factor in the character of land use in the Tennessee Valley. *Econ. Geog.* 13, 1937 (385-392).
- (76) 631.459 : 631.61—Bennett, H. H. Soil defence in the south. *SCS-MP-8*, 1936, pp. 7. *Herb. Abs.* 6 (350).

## FERTILIZERS AND GENERAL AGRONOMY

- (76) 631.459 : 631.61—**Nicholson, J. H.** Erosion control in the Tennessee Valley. *Agric. Engng.* 17, 1936 (509-510).
- (76) 631.459 : 631.61—**Rowalt, E. M.** Soil defence in the Piedmont. *U.S.D.A. Farm. Bull.* 1767, 1937, pp. 62.
- (76) 631.47—**Mereness, E. H.** Long time mortgage credit in the Alabama Coastal Plains area. *Amer. Soil Surv. Bull.* 17, 1936 (90-92).
- (76) 631.81—**Bear, F.** Some fertilizer problems in the southern States. *Amer. Fert.* 86, Feb. 20, 1937 (8-9, 26).
- (76) 633.51-1.67—**McDowell, C. H.** Growing cotton under irrigation in the Wichita Valley of Texas. *Tex. Agric. Expt. Sta. Bull.* 494, 1934, pp. 21. E.S.R. 72 (176).
- (76) 633.51-1.81—**Davis, F. L. ; Lovett, H. C.** Fertilizers for cotton on the Coastal Plain of Louisiana. *La. Agric. Expt. Sta. Bull.* 285, 1937, pp. 10. E.S.R. 77 (477).
- (76) 633.51-1.81—**Davis, F. L. ; Lovett, H. C.** Fertilizers for cotton on the prairie soils of south-west Louisiana. *La. Agric. Expt. Sta. Bull.* 286, 1937, pp. 82. E.S.R. 77 (477).
- (76) 633.51-1.81—**Haddon, C. B.** Some Louisiana cotton fertilizer experiments. *Amer. Fert.* 86, May 1, 1937 (7, 8, 24).
- (76) 633.51-1.81—**Lovett, H. C. ; Davis, F. L.** Fertilizers for cotton on the Red and Mississippi River alluvial soils of Louisiana. *La. Agric. Expt. Sta. Bull.* 284, 1937, pp. 8. E.S.R. 77 (476).
- (76) 633.61-1.811—**O'Neal, A. M. ; Schreiner, O. ; Hurst, L. A.** Fertilizer studies on the Yazoo and Lintonia (La.) soils. *Proc. Int. Soc. Sig. Cane Tech.* 5, 1935 (644-653). C.A. 30 (3566).
- (76) 635-1.5—**Friend, W. H. ; Clark, S. W.** The production of spring vegetables in the Lower Rio Grande Valley. *Tex. Agric. Expt. Sta. Circ.* 72, 1934, pp. 56.
- (77) 631.4—**Brown, P. E.** Soils of Iowa. *Iowa Agric. Expt. Sta. Spec. Rept.* 3, 1936, pp. 261.
- (77) 631.411.3—**King, B. M.** The utilization of Wabash clay (gumbo) soils in crop production. *Missouri Agric. Expt. Sta. Res. Bull.* 254, 1937, pp. 42.
- (77) 631.411.4 : 631.58—**Harmer, P. M.** Methods of conserving Michigan muck soils. *Mich. Agric. Expt. Sta. Quart. Bull.* 19, 1937 (182-191).
- (77) 631.414.2 : 631.416—**Dean, H. C. ; Smith, F. B. ; Brown, P. E.** The composition of inorganic colloids extracted from three Iowa soils. *Proc. Iowa Acad. Sci.* 42, 1935 (103-104). C.A. 30 (8469).
- (77) 631.416—**Brown, P. E. ; Walker, R. H.** The nitrogen, phosphorus and organic carbon contents of Iowa soils. *Proc. Iowa Acad. Sci.* 42, 1935 (105). C.A. 30 (8468).
- (77) 631.416—**Walker, R. H. ; Brown, P. E.** Chemical analyses of Iowa soils for phosphorus, nitrogen and carbon. *Iowa Agric. Expt. Sta. Res. Bull.* 203, 1936, pp. 103.
- (77) 631.416.2—**Snider, H. J.** The solubility of phosphorus in soils from some Illinois experiment fields. *Soil Sci.* 38, 1934 (471-476).
- (77) 631.416.7/8—**Alway, F. J. ; Zetterberg, J. M.** Relative amounts of calcium carbonate and magnesium carbonate in some Minnesota soils. *Soil Sci.* 39, 1935 (9-14). B.C.A. 54 (281).

# BIBLIOGRAPHY OF SOIL SCIENCE

- (77) 631.44—Winters, E.; Wascher, H. Local variability in the physical composition of Wisconsin drift. *J. Amer. Soc. Agron.* 27, 1935 (617-622).
- (77) 631.44 : 581.5—Turner, L. M. Ecological studies in the Lower Illinois River Valley. *Bot. Gaz.* 97, 1936 (689-727).
- (77) 631.44(083.72)—Conrey, G. W.; Burrage, E. M. Revised nomenclature of soil type names used in Ohio soil surveys. *Ohio Agric. Expt. Sta. Spec. Circ.* 47, 1936, pp. 29. E.S.R. 75 (166)\*
- (77) 631.454 : 631.416.4—Dean, H. C. Is there a deficiency of available potassium in so-called alkali soils of Iowa? *Proc. Iowa Acad. Sci.* 41, 1934 (133-137). B.C.A. 55 (35).
- (77) 631.458—Jenny, H. Soil fertility losses under Missouri conditions. *Missouri Agric. Expt. Sta. Bull.* 324, 1933, pp. 10.
- (77) 631.459—Buchanan, R. E. Research in Iowa in soil erosion, soil conservation, and related land use planning. *Iowa Agric. Expt. Sta.* 1936, pp. 47. E.S.R. 75 (852).
- (77) 631.459—Walker, R. H.; Brown, P. E. Soil erosion in Iowa. *Iowa Agric. Expt. Sta. Spec. Rept.* 2, 1936, pp. 47. E.S.R. 75 (853).
- (77) 631.461.5—Turk, L. M. Studies of nitrogen fixation in some Michigan soils. *Mich. Agric. Expt. Sta. Tech. Bull.* 143, 1935, pp. 36.
- (77) 631.47—Smith, R. S. Land use and the soil survey in Illinois. *Amer. Soil Surv. Bull.* 15, 1934 (32-33). E.S.R. 74 (456).
- (77) 631.47 : 631.452—Pinckney, R. M. Resettlement in Northern Minnesota. *Amer. Soil Surv. Bull.* 17, 1936 (83-89).
- (77) 631.473—Brown, P. E.; Orrben, C. L. *et al.* Soil survey of Iowa Monroe County. *Iowa Agric. Expt. Sta. Soil Surv. Rept.* 78, 1936, pp. 64.
- (77) 631.48—Stauffer, R. S. Local variability in Wisconsin till and its influence on soil character. *Amer. J. Sci.* 34, 1937 (235-243). C.A. 31 (7573).
- (77) 631.58—Bauer, F. C.; Lang, A. L.; Badger, C. J. Crop yields from Illinois soil experiment fields. *Ill. Agric. Expt. Sta. Bull.* 425, 1936, pp. 243.
- (77) 631.58—Brown, P. E. Some problems of land use in the corn belt. *J. Amer. Soc. Agron.* 28, 1936 (173-192).
- (77) 631.811—Conner, S. D. Nitrogen, phosphorus and potassium requirements of Indiana surface soils and subsoils. *J. Amer. Soc. Agron.* 27, 1935 (52-56).
- (77) 634.23-1.4—Gardner, V. R. Factors influencing the yields of Montmorency cherry orchards in Michigan. *Mich. Agric. Expt. Sta. Spec. Bull.* 275, 1936, pp. 18. *Hort. Abs.* 7 (14).
- (77) 634.8-1.4—Morrison, P. C. Viticulture in Ohio. *Econ. Geog.* 12, 1936 (71-85).
- (77) 634.9-1.4—Daubenmire, R. F. The "Big Woods" of Minnesota: its structure, and relation to climate, fire, and soils. *Ecol. Monog.* 6, 1936 (233-268).
- (77) 631.461.52—Martin, W. P.; Walker, R. H. The occurrence and distribution of azotobacter in Iowa soils. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (215).
- (78) 631.436—Mall, G. A. Soil temperatures at Bozeman, Montana, during sub-zero weather. *Science* 83, 1936 (574).

## FERTILIZERS AND GENERAL AGRONOMY

(78) 631.459—~~Cooperrider~~, C. K. ; Hendricks, B. A. Erosion on the upper Rio Grande. *Science* 84, 1936 (203).

(78) 631.459—Hoover, J. W. Navajo land problems. *Econ. Geog.* 13, 1937 (281-300).

(78) 631.459 : 551.511—Joel, A. H. Conditions in the so-called dust bowl as revealed by a recent soil conservation survey. *Proc. Soil Sci. Soc. Amer.* 1, 1937 (343-344).

(78) 631.58—Throckmorton, R. I. ; Duley, F. L. Twenty years of soil fertility investigations. *Kans. Agric. Expt. Sta. Tech. Bull.* 40, 1935, pp. 57.

(78) 631.58—Sarvis, J. T. ; Thysell, J. C. Crop rotation and tillage experiments at the Northern Great Plains field station, Mandan, N. Dak. *U.S.D.A. Tech. Bull.* 536, 1936, pp. 75.

(78) 631.586—Mathews, O. R. ; Clark, V. I. Results of field crop, shelter-belt, and orchard investigations at the United States dry land field station, Ardmore, S. Dak, 1911 32. *U.S.D.A. Circ.* 421, 1937, pp. 47.

(78) 631.67—Slagsvold, P. L. ; Bingham, G. H. An analysis of agriculture on the Milk River irrigation project. *Mont. Agric. Expt. Sta. Bull.* 290, 1934, pp. 80. E.S.R. 72 (268).

(78) 633.2.03-1.459—Florell, V. H. Native grasslands in the Huron (South Dakota) area. *J. Amer. Soc. Agron.* 29, 1937 (403-411). *Herb. Abs.* 7 (198).

(78) 633.2.03-1.5—Aldous, A. E. Management of Kansas permanent pastures. *Kans. Agric. Expt. Sta. Bull.* 272, 1935, pp. 44.

(78) 633.491-1.81—Clapp, A. L. ; Myers, H. E. ; Timmons, F. L. Commercial fertilizers for potatoes in the Kansas River Valley. *Kans. Agric. Expt. Sta. Circ.* 174, 1935, pp. 12. E.S.R. 73 (175).

(79) 553.97—Dachnowski-Stokes, A. P. Peat land in the Pacific Coast States in relation to land and water resources. *U.S.D.A. Dept. Agric. Misc. Pub.* 248, 1936, pp. 68.

(79) 631.4—Cosby, S. W. ; Goar, L. G. Soils and crops of the Imperial Valley. *Calif. Agric. Expt. Sta. Circ.* 334, 1934, pp. 108.

(79) 631.4—Spencer, V. E. Nevada soils : An outline of proposed investigations. *Nevada Agric. Expt. Sta. Bull.* 144, 1936, pp. 17. E.S.R. 76 (752).

(79) 631.411.1 : 631.58—Zobell, I. D. Soil-management and crop-production studies : Carbon County area. *Utah Agric. Expt. Sta. Bull.* 270, 1936, pp. 24. E.S.R. 75 (310).

(79) 631.411.4—Cosby, S. W. Peat soils of California. *Amer. Soil Surv. Bull.* 16, 1935 (102-104).

(79) 631.411.4 : 631.58—Wilson, L. Muck-soil management and crop-production studies : Sanpete County Experimental Farm 1927 to 1933 inclusive. *Utah Agric. Expt. Sta. Bull.* 267, 1936, pp. 28. E.S.R. 75 (310).

(79) 631.44—Weir, W. W. ; Storie, R. E. A rating of California soils. *Calif. Agric. Expt. Sta. Bull.* 599, 1936, pp. 157.

(79) 631.44—Shaw, C. F. Some California soils and their relationships. *Univ. Calif. Syllabus Ser., Syllabus J.D.* 1937, pp. 117.

(79) 631.44—Vlasoff, P. I. ; Wheeting, L. C. Characteristics of certain soil profiles of South-eastern Washington. *Soil Sci.* 44, 1937 (65-82).

# BIBLIOGRAPHY OF SOIL SCIENCE

- (79) 631.445 : 581.5—Nikiforoff, C. C. The inversion of the great soil zones in Western Washington. *Geog. Rev.* 27, 1937 (200-213).
- (79) 631.445.2—Wheating, L. C. Shot soils of Western Washington. *Soil Sci.* 41, 1936 (35-44).
- (79) 631.445.3—Anderson, L. L. Profile characteristics of a Western Washington soil. *Amer. Soil Surv. Bull.* 17, 1936 (170-172).
- (79) 631.445.4—Wheating, L. C. Prairie soils of the Olympic Peninsula, Washington. *Amer. Soil Surv. Bull.* 17, 1936 (166-169).
- (79) 631.459—Renner, F. G. Conditions influencing erosion on the Boise river watershed. *U.S.D.A. Tech. Bull.* 528, 1936, pp. 32.
- (79) 631.459—Renner, F. G. Causes of erosion on the Boise River watershed. *Science* 84, 1936 (62-63).
- (79) 631.459—Rowalt, E. M. Soil and water conservation in the Pacific North-west. *U.S.D.A. Farm. Bull.* 1773, 1937, pp. 59.
- (79) 631.461—Snow, L. M. A comparative study of the bacterial flora of wind-blown soil. V. Monterey Peninsula, California. *Soil Sci.* 39, 1935 (233-236).
- (79) 631.461—Snow, L. M. A comparative study of the bacterial flora of wind-blown soil. VI. Death Valley, California, with summary of six soil studies. *Soil Sci.* 40, 1935 (181-190).
- (79) 631.61—Knight, E. W. Agricultural investigations on the Newlands (Nev.) reclamation project. *U.S.D.A. Tech. Bull.* 464, 1935, pp. 35.
- (79) 631.821.1—Stephenson, R. E.; Powers, W. L. Liming Western Oregon soil. *Oreg. Agric. Expt. Sta. Bull.* 325, 1934, pp. 19.
- (79) 633.491-1.81—Brown, G. G. Influence of commercial fertilizers on yields, grades and net value of potatoes in Hood River Valley. *Oregon Agric. Expt. Sta. Bull.* 343, 1936, pp. 29. E.S.R. 76 (621).
- (79) 633.51 1.4—Matlock, R. L.; Kennedy, J. R. The quality of Arizona cotton. *Ariz. Agric. Expt. Sta. Bull.* 150, 1935 (289-351).
- (79) 633.52-1.4—Hoffman, C. S. Oregon lowlands suitable for flax. *Econ. Geog.* 12, 1936 (164-166).
- (79) 633.63-1.5—Robbins, W. W.; Price, C. Sugar-beet production in California. *Calif. Agric. Expt. Sta. Ext. Circ.* 95, 1936, pp. 78.
- (79) 633.79-1.4—Freeman, O. W. Hop industry of the Pacific Coast States. *Econ. Geog.* 12, 1936 (155-163).
- (79) 634.13-1.67—Lewis, M. R. Studies of the irrigation of pear orchards on heavy soil near Medford, Oreg. *U.S.D.A. Tech. Bull.* 432, 1934, pp. 34.
- (79) 634.13-1.81—Overholser, E. L.; Claypool, L. L. The response of d'Anjou pears to fertilizers in central Washington. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (299-303). *Hort. Abs.* 6 (249).
- (79) 634.3-1.81—Jones, H. S. Citrus growing in Indian River County. *Citrus Indust.* 16, No. 6, 1935 (14-16, 18).
- (79) 635-1.81—Wharton, M. F. Vegetable fertilizers in Arizona. *Proc. Amer. Soc. Hort. Sci.* 33, 1936 (552-554).

## FERTILIZERS AND GENERAL AGRONOMY

- (79) 635.35-1.5—Jones, H. A. ; Ernst, F. H. ; Tavernetti, A. A. The cauliflower industry of California. *Calif. Agric. Expt. Sta. Ext. Circ.* 93, 1935, pp. 32.

### (8) SOUTH AMERICA

- (8) 631.4—Matthel, A. The soil geography of South America. *Soil Res.* 5, 1936 (75-98). [G.]
- (8) 631.4—Vilensky, D. G. North and South American soils. *Pedology* No. 4, 1936 (562-587). [R.e.]
- (81/2) 631.445—Matthel, A. Soil types in the Argentine and Brazil. *Tropenpflanzer* 37, 1934 (523). Z.P.D. 40 (378).
- (81) 631.413.41—Camargo, T. de ; Vageler, P. On the "q" and "T" values of mineral soils in Brazil. *Ernähr. Pflanze* 33, 1937 (85-87). [G.e.]
- (81) 631.459—Cuba, P. Soil erosion in São Paulo. *Inst. Agron. São Paulo Bol. Tech.* No. 9, 1936, pp. 15. [Pt.]
- (81) 631.874—Escobar, C. G. Green manure. *Min. Agric. R. de Janeiro* 1933, pp. 5. *Herb. Abs.* 5 (40).
- (81) 633.31-1.5—Grieder, A. Lucerne, lucerne substitute and clover grass culture in Brazil. *Tropenpflanzer* 36, 1933 (47). Z.P.D. 38 (373).
- (81) 633.51-1.5—Tissot, P. Cotton culture in Brazil. *Rev. Bot. Appl.* 17, 1937 (204-210). [F.]
- (81) 634.9-1.4—Freise, F. W. Observations on the Brazilian coastal forests. *Ztschr. Weltforstwirtschaft.* 1, 1934 (417-438). *Biol. Abs.* 9 (172).
- (81) 634.9-1.4—Freise, F. W. Silvicultural conditions in the arid area of North-eastern Brazil. *Ztschr. Weltforstwirtschaft.* 4, 1937 (307-330) [G.e.]
- (82) 631.4—Gollan, J. ; Cruellas, J. ; Nicollier, V. Soils of Misiones. *Rev. Fac. Quím. Ind. Agric. Univ. Nacl. Litoral* 4, 1936 (166-185). C.A. 30 (7263).
- (82) 631.432.2—Arena, A. Determination of available water in some Argentine soils by the Vageler and Alten method. *An. Assoc. Quím. Argent.* 24, 1936 (163-164). C.A. 31 (5916).
- (86) 633.74-1.5—Obanod, N. Cultivation of cacao. *Bull. Off. Int. Choc. Cacao* 6, 1936 (225-246). [F.e.]
- (881) 631.4—Follett-Smith, R. R. Report on agricultural conditions in the Rupununi district and Pakaraima mountains. *Agric. J. Brit. Guiana* 6, 1935 (155-184).
- (881) 633.18-1.5—Burnett, F. Padi cultivation in British Guiana. *Agric. J. Brit. Guiana* 7, 1936 (73-96).
- (881) 633.61-1.5—International Sugar Journal. The sugarcane in British Guiana. *Int. Sug. J.* 39, 1937 (50-52).
- (881) 634.771-1.4—Burnett, F. ; Follett-Smith, R. R. Bananas in British Guiana. *Agric. J. Brit. Guiana* 5, 1934 (148-165).
- (883) 631.811.4—Müller, H. J. Investigations into the theoretical "lime requirement" of Surinam soils. *Soil Res.* 5, 1937 (222-228). [E.]
- (892) 631.4—Groeber, P. The soils of Corrientes and Uruguay, in the light of recent work. *An. Assoc. Quím. Argent.* 22, 1934 (91-99). C.A. 29 (1553).

## BIBLIOGRAPHY OF SOIL SCIENCE

### (9) OCEANIA. POLAR REGIONS

- (911.14) 631.445.7 : 581.5—Richards, P. W. Ecological observations on the rain forest of Mount Dulit, Sarawak. II. *J. Ecol.* 24, 1936 (340-360). C.A. 31 (1137).
- (911.14) 631.589—Spurway, B. J. C. Shifting cultivation in Sarawak. *Malay. Forester* 6, 1937 (124-128). C.M.R. 16 (2).
- (912) 631.459—Verhoef, L. Erosion in Celebes. *Tectona* 30, No. 3, 1937 (220-222). C.M.R. 18 (6).
- (914) 63—Valkenburg, S. v. Agricultural regions of Asia. Pt. X. The Philippine Islands. *Econ. Geog.* 12, 1936 (231-249).
- (914) 631.4—Pendleton, R. L. The Bicol region. From the notebook of a soil technologist. *Philipp. Agrist.* 23, 1935 (247-252).
- (914) 631.4—Pendleton, R. L. Glimpses of Cotabato Province. From the notebook of a soil technologist. *Philipp. Agrist.* 23, 1935 (733-741).
- (914) 631.4—Pendleton, R. L. Glimpses of hinterlands in the Southern Islands: Zamboanga, Jolo and Cebu. *Philipp. Agrist.* 23, 1935 (823-832).
- (914) 631.4—Pendleton, R. L. Studies of Philippine soils. I. The history of soil science in the Archipelago. *Philipp. Agrist.* 24, 1935 (5-15). C.A. 29 (5562).
- (914) 631.4—Pendleton, R. L. Here and there in Southern-central and Northern Luzon. *Philipp. Agrist.* 24, 1935 (89-103).
- (914) 631.4—Pendleton, R. L. Soil surveys, classification and mapping in the Philippines. *Philipp. Nat. Res. Council. Rept.* 1, Bull. 6, 1935 (590-594).
- (914) 631.4—Rosell, D. Z.; Argüelles, A. S. The soil of Tagaytay Ridge, Cavite. *Philipp. J. Sci.* 57, 1935 (409-420).
- (914) 631.413.41—Aquino, D. I. A study of the base exchange properties of certain Philippine soils. *Philipp. Agrist.* 25, 1936 (128-144). C.A. 30 (6868).
- (914) 631.417 4—Villanueva, L. J.; Lumang, H. E. Carbon-nitrogen ratios of some Philippine soils. *Philipp. Agrist.* 24, 1936 (854-862).
- (914) 631.44 : 631.434—Alicante, M. M.; Rosell, D. Z. Index of texture and classification of Philippine soils. *Philipp. J. Sci.* 59, 1936 (505-508).
- (914) 631.459—Pendleton, R. L. Erosion of agricultural soils in the Philippines. *Sug. News* 16, 1935 (237-248).
- (914) 631.473—Alicante, M. M.; Rosell, D. Z.; Isidro, R. et al. Soil survey of Bulacan Province, Philippine Islands. *Philipp. Dept. Agric. Tech. Bull.* 5, 1936, pp. 28.
- (914) 631.86—Villegas, V.; Ynalvez, L. A.; Elefano, A. A comparative study of the amount of feces voided by Philippine and Nellore cattle and the fertilizing constituents contained therein. *Philipp. Agrist.* 25, 1937 (833-840).
- (914) 633.18 1.416.1-1.81—Barrera, A. V. The effects of certain fertilizers and soil amendment treatments upon total nitrogen of Nanhaya clay, a local rice soil. *Philipp. Agrist.* 25, 1937 (689-703).

## FERTILIZERS AND GENERAL AGRONOMY

(914) 633.18-1.5—Bautista, B. R. The general practice of lowland rice farming in the Philippines. *Philipp. J. Agric.* 8, 1937 (105-118).

(914) 633.61-1.4—Alicante, M. M. Soil surveys. *Philipp. Sug. Assoc. Ann. Rept. Dir. Res.* 1931-32, 1932 (492-504). C.A. 29 (265).

(914) 633.61-1.4—Alicante, M. M. Survey of soils in the district of (i) Philippine Milling Co., Mendozo, (ii) Cebu Sugar Co., Cebu, (iii) Hind Sugar Co., Manaoag, Pangasinan, (iv) Central Don Pedro, Nasugbu, Batangas, (v) Central Colatagan, Batangas. *Philipp. Sug. Assoc. Rept. Res. Bur.* 1932-33, 1933 (69-87). B.C.A. 55 (209).

(914) 634.61-1.5—Cooke, F. C. The coconut industry of the Philippine Islands. *S.S. and F.M.S. Dept. Agric. Gen. Ser. Bull.* 23, 1936, pp. 101.

(92) 63—Valkenburg, S. v. Agricultural regions of Asia. IX. Java. *Econ. Geog.* 12, 1936 (27-44).

(92) 631.411.1:581.5—Posthumus, O. Some remarks on the vegetation on the sandy soil of the Padang Loewai (E. Koetai, E. Borneo). *Proc. Acad. Sci. Amsterdam* 40, 1937, pp. 10.

(92) 631.44—Veen, R. van der. Soil types of the Besoek experiment station province. *Meded. Besoek. Proefsta.* No. 51, 1934, pp. 29.

(92) 631.445.7—Mohr, E. C. J. The soil of the tropics in general and in particular those of the Netherland Indies. Part II. *Kolon. Inst. Amsterdam Meded.* 31, 1935 (143-342). [Du.]

(92) 631.459—Coster, C. Erosion in Java (2). *Tectona* 29, 1936 (961-962). C.M.R. 18 (6).

(92) 631.459—Haan, J. H. de. Stream flow and erosion in the Alps and Java. *Tectona* 29, 1936 (559-588). C.M.R. 18 (1055). [Du.e.]

(92) 631.459—Coster, C. Erosion in Netherlands Indies. *Tectona* 30, 1937 (316-318). C.M.R. 18 (6).

(92) 631.471—Riele, H. J. Te. Soil surveys in the Netherlands Indies. *Trans. 3rd Int. Cong. Soil Sci.* 3, 1936 (145-147).

(92) 633.61-1.44—Mohr, E. C. J. et al. The genetic classification and mapping of Java sugar cane soils. Translated by Pendleton, R. L. *Arch. Suikerindust.* 39, 1931 (881-890).

(92) 633.73-1.5—Gillett, S. Report on a visit to Southern India and Java. Part II. The coffee industry of Java (N.E.I.). Conclusions and recommendations. *E. Afric. Agric. J.* 2, 1936 (149-163).

(92) 633.91-1.4—Hülßen, G. Rubber growing in Sumatra. *Ernähr. Pflanze* 31, 1935 (108-113). [G.]

(931) 631.4—Grange, L. I. Soils of New Zealand. *Handbk. Aust. and N.Z. Assoc. Adv. Sci.* 1937 (89-91).

(931) 631 413.42—Scrivenor, F. L. C. The degree of saturation with bases of some New Zealand soils. *N.Z.J. Sci. Tech.* 16, 1935 (271-277).

(931) 631.416.2—Kidson, E. B. The phosphate-status of Ashburton soils. *N.Z.J. Sci. Tech.* 17, 1935 (453-464).

(931) 631.416.327—Askew, H. O. Internal cork of apples. Progress on boron investigations at the Cawthron Institute. *Orchard. N.Z.* 9, 1936 (185-188). *Hort. Abs.* 7 (121).



## BIBLIOGRAPHY OF SOIL SCIENCE

- (931) 631.416.327—Askew, H. O.; Thomson, R. H. K.; Kidson, E. B. The boron status of New Zealand fruit soils. *N.Z.J. Sci. Tech.* 18, 1937 (789-796).
- (931) 631.416.873—Kidson, E. B. Cobalt status of New Zealand soils. *N.Z.J. Sci. Tech.* 18, 1937 (694-707).
- (931) 631.473—Grange, L. I. Field-work on soils of Levels Plain. *N.Z. Dept. Sci. Indust. Res. 9th Ann. Rept.* 1935 (46-47).
- (931) 631.473—Grange, L. I.; Taylor, N. H. Field-work on soils of Waipa County. *N.Z. Dept. Sci. Indust. Res. 9th Ann. Rept.* 1935 (47-50).
- (931) 631.473—New Zealand. Report on soil survey, 1934-35. *N.Z. Dept. Sci. Indust. Res.* 1935, pp. 31.
- (931) 631.473—New Zealand. Report on soil surveys for 1935-36. *N.Z. Dept. Sci. Indust. Res. Ann. Rept. 1935-36*, 1936, pp. 25.
- (931) 631.473—Rigg, T. Soil surveys. Their importance to New Zealand Agriculture. *N.Z.J. Sci. Tech.* 18, 1936 (95-105).
- (931) 631.473 : 631.67—Grange, L. I. Soils of Ashburton County in relation to irrigation. *N.Z. Dept. Sci. Indust. Res. 9th Ann. Rept.* 1935 (56-68).
- (931) 633.2.03-1.411.1—Glanville, E. B. Grassing of consolidated sand areas, Northern Wairoa, North Auckland. *N.Z.J. Agric.* 54, 1937 (328-344).
- (931) 633.2.03-1.67—Flay, A. H. Irrigation in Canterbury. *N.Z.J. Sci. Tech.* 16, 1935 (185-205).
- (931) 633.2.03-1.67—Flay, A. H. Irrigation in Canterbury. Investigations at Seafeld demonstration and experiment station, Mid-Canterbury. Report of progress for period 1st July, 1934, to 10th May, 1935. *N.Z.J. Sci. Tech.* 17, 1936 (758-774).
- (931) 633.2.03-1.81—Rigg, T. Effect of fertilisers on pasture production. *N.Z. Dept. Sci. Indust. Res. Ann. Rept.* 1934, pp. 19.
- (931) 633.2.03-1.81—Askew, H. O.; Rigg, T. *et al.* The manuring of Nelson pastures. *N.Z.J. Sci. Tech.* 18, 1936 (40-50). *Cawthron Inst. Pasture Res. Pub.* 28.
- (931) 633.2.03-1.81—Holford, G. H. Fertilizing pastures in New Zealand. *Amer. Fert.* 87, Aug. 7, 1937 (12-13, 24).
- (931) 633.2.03-1.821.1—Woodcock, J. W. The use of lime on New Zealand pastures. *N.Z.J. Agric.* 52, 1936 (1-8).
- (931) 633.2.03-1.83—Bell, J. E. Potash top-dressing of Auckland pastures. Response to potash at Waihi. *N.Z.J. Agric.* 53, 1936 (359-365).
- (931) 633.2.03-1.83—Bell, J. E. Potash top-dressing of Auckland pastures. *N.Z.J. Agric.* 54, 1937 (8-14).
- (931) 634-1.81—Rigg, T. Fertilization of fruit trees (in New Zealand). *Commun. 11th Cong. Int. Hort. Rome* 8, 1935, *Hort. Abs.* 5 (211).
- (931) 634.3-1.5—Hamilton, W. M. A preliminary survey of the citrus industry in New Zealand. *N.Z. Dept. Sci. Indust. Res. Bull.* 53, 1937, pp. 269.
- (935) 63—Lever, R. J. A. W. The physical environment, fauna and agriculture of the British Solomon Islands (contd.). *Trop. Agric. Trin.* 14, 1937 (307-312).
- (935) 631.4—Lever, R. J. A. W. The physical environment, fauna and agriculture of the British Solomon Islands. *Trop. Agric. Trin.* 14, 1937 (281-285).

## FERTILIZERS AND GENERAL AGRONOMY

- (935) 631.416—Imperial Institute. Soils from the British Solomon Islands Protectorate. *Bull. Imp. Inst.* 31, 1933 (497–500). B.C.A. 53 (372).
- (94) 631.445.55 : 631.432.2—Prescott, J. A. The climatic control of the Australian deserts. *Trans. Roy. Soc. S. Aust.* 60, 1936 (93–95).
- (94) 633.11-1.811.1—Prescott, J. A. The nitrogen problem in the Australian wheat belt. *Fifth Pacific Sci. Cong* [1934 ?] (2657–2667).
- (94) 633.2.03—McTaggart, A. A survey of the pastures of Australia. *Aust. Coun. Sci. Indust. Res. Bull.* 99, 1936, pp. 71.
- (94) 633.61—Borden, R. J. Sugar in Australia. *Hawaii. Plant. Rec.* 39, 1935 (206–221).
- (94) 633.71-1.4—Australia Tobacco. Tobacco production in Australia. *Aust. Tobacco Invest. Bull.* 3, 1932, pp. 81.
- (94) 633.71-1.4—Dickson, B. T. The tobacco growing industry in Australia. *J. Aust. Inst. Agric. Sci.* 3, 1937 (138–141).
- (941) 631.4—Teakle, L. J. H.; Southern, B. L. An investigation of the terrace soils of the Gascoyne river at Carnarvon. *J. Dept. Agric. W. Aust.* 12, 1935 (245–259).
- (941) 631.4—Teakle, L. J. H.; Southern, B. L. The soils of Esperance Plain. *J. Dept. Agric. W. Aust.* 13, 1936 (444–450). C.A. 31 (5086).
- (941) 631.4 : 549—Carroll, D. Heavy mineral assemblages of soils from the gold fields of Western Australia. *Geol. Mag.* 73, 1936 (503–511). B.C.A.A. 1937 (156).
- (941) 631.416—Simpson, E. S.; Teakle, L. J. H. Notes on the Dartmoor agricultural area. *J. Dept. Agric. W. Aust.* 11, 1934 (70–91).
- (941) 631 445 5—Teakle, L. J. H. Red and brown hardpan soils of the Acacia semi-desert scrub of Western Australia. *J. Dept. Agric. W. Aust.* 13, 1936 (480–493).
- (941) 631.47—Teakle, L. J. H. Soil surveys in Western Australia. *J. Aust. Inst. Agric. Sci.* 3, 1937 (86–92).
- (941) 631.473—Burvill, G. H. Soil survey of the Salmon Gums district, Western Australia. *J. Aust. Inst. Agric. Sci.* 2, 1936 (117–119).
- (941) 631.473—Hosking, J. S.; Greaves, G. A. A soil survey of an area at Gingin, Western Australia. *J. Roy. Soc. W. Aust.* 22, 1935–36 (71–112).
- (941) 633.11-1.84—Teakle, L. J. H.; Samuel, L. W. The value of nitrogenous fertilizers for wheat in Western Australia. *J. Dept. Agric. W. Aust.* 13, 1936 (74–89).
- (941) 633.2.03-1.81—Baron-Hay, G. K.; Elliott, H. G. Results of fertilizer trials under controlled methods of grazing. *J. Dept. Agric. W. Aust.* 13, 1936 (60–66).
- (941) 633.71-1.81—Sharp, A. Field experiments with tobacco in the Manjimup-Pemberton district. *J. Dept. Agric. W. Aust.* 12, 1935 (311–317).
- (941) 634.9—Kessell, S. L.; Stoate, T. N. The forests of the arid southern interior of Western Australia. *Aust. Forestry* 1, 1936 (16–20).
- (942) 63 : 551.58—Trumble, H. C. The climatic control of agriculture in South Australia. *Trans. Roy. Soc. S. Aust.* 61, 1937 (41–62).

## BIBLIOGRAPHY OF SOIL SCIENCE

(942) 631.432 : 631.67—Tisdall, A. L. Free-water investigations in the South Australian areas of the Murray Valley. *Aust. J. Counc. Sci. Indust. Res.* 9, 1936 (301-312).

(942) 631.473—Marshall, T. J.; Hosking, J. S. Soil survey of the area at "Dismal Swamp". *Aust. Counc. Sci. Indust. Res. Bull.* 85, 1934 (18-22). B.C.A. 54 (242).

(942) 631.473 : 631.67—Marshall, T. J.; Hooper, P. D. A soil survey of the Berri, Coblogla, Kingston and Moorook irrigation areas and the Lyrup Village district, South Australia. *Aust. Counc. Sci. Indust. Res. Bull.* 86, 1935, pp. 54.

(942) 631.841.1—Scott, R. C. Nitrogenous fertilizer experiments with barley and oats in South Australia. *J. Dept. Agric. S. Aust.* 38, 1935 (988-989). J.H.B. 4 (208).

(942) 633.1-1.81—Scott, R. C. Cereal and manurial experiments in South Australia (contd.). *J. Dept. Agric. S. Aust.* 40, 1937 (612-626).

(942) 633.11-1.4—Andrews, J. The present situation in the wheat-growing industry in South-eastern Australia. *Econ. Geog.* 12, 1936 (109-135).

(942) 633.2.03-1.4—Trumble, H. C. The relation of pasture development to environmental factors in South Australia. *J. Dept. Agric. S. Aust.* 38, 1935 (1460-1487).

(942) 633.2.03-1.4—Trumble, H. C. Relation of pasture development to environmental factors in South Australia. *J. Aust. Inst. Agric. Sci.* 1, 1935 (30-31).

(942) 633.2.03-1.5—Cook, L. J. The development of Red Gum lands. *J. Dept. Agric. S. Aust.* 40, 1937 (635-748). B.I.I. 35 (390).

(943) 631.44 : 581.5—Tommerup, E. C. Plant ecological studies in South-East Queensland. *Proc. Roy. Soc. Queensland* 46, 1935 (91-118).

(943) 631.61—Hirschfeld, E.; Hirschfeld, R. S. Soil problems in Brigalow and Belah country. *Queensland Agric. J.* 47, 1937 (586-599).

(943) 631.62—Clarkson, F. E. M. Surface drainage in the Mackay District. *Abs. Pap. 5th Cong. Int. Soc. Sug. Cane Tech. Agric. Sect. Australia* 1935. *Hawaii. Plant. Rec.* 39, 1935 (287).

(943) 631.67—Pringle, J. Irrigation trial at Bundaberg. *Cane Grow. Quart. Bull.* 2, 1934 (25-27).

(943) 631.671—King, N. J. Subterranean waters of the Woongarra lands—their suitability for irrigation. *Cane Grow. Quart. Bull.* 4, 1936 (75-78). C.A. 31 (797).

(943) 631.671—Cassidy, N. G. Irrigation waters of the Burdekin delta. *Queensland Bur. Sug. Expt. Stat. Tech. Commun.* 1, 1937, pp. 16.

(943) 633.61-1.4—King, N. J. Soils of the Bundaberg area. *Cane Grow. Quart. Bull.* 2, 1935 (135-138).

(943) 633.61-1.4—King, N. J. Cane soils of North Queensland. *Cane Grow. Quart. Bull.* 4, 1937 (143-148).

(943) 633.61-1.5—King, N. J. Caneland cultivation in Queensland. *Abs. Pap. 5th Cong. Int. Soc. Sug. Cane Tech. Agric. Sect. Australia* 1935. *Hawaii. Plant. Rec.* 39, 1935 (281).

(943) 633.61-1.67—Tapiolas, B. Irrigation in the lower Burdekin district. *Abs. Pap. 5th Cong. Int. Soc. Sug. Cane Tech. Agric. Sect. Australia* 1935. *Hawaii. Plant. Rec.* 39, 1935 (286).

## FERTILIZERS AND GENERAL AGRONOMY

- (943) 634.334-1.5—Prest, R. L. Lemon growing in Queensland. *Queensland Agric. J.* 44, 1935 (202-204). *Hort. Abs.* 5 (237).
- (944) 631.416.2—Holman, W. M. A study of phosphate solubility in certain New South Wales soils. *J. Proc. Roy. Soc. N.S. Wales* 70, 1937 (267-284).
- (944) 631.445.7—Prescott, J. A.; Hosking, J. S. Some red basaltic soils from Eastern Australia. *Trans. Roy. Soc. S. Aust.* 60, 1936 (35-45).
- (944) 631.459—Byles, B. U. A reconnaissance of the mountainous part of the River Murray catchment in New South Wales. *Commonwealth Forestry Bur. Bull.* 13, 1932, pp. 34.
- (944) 631.459—Clayton, E. S. Soil erosion. *Agric. Gaz. N.S.W.* 48, 1937 (312-316).
- (944) 631.472—Parbery, N. H. Studies of certain profiles of the South Coast of New South Wales. *N.S.W. Dept. Agric. Sci. Bull.* 50, 1936, pp. 43.
- (944) 631.473—Marshall, T. J.; Walkley, A. A soil survey of the Coomella, Wentworth (Curlwaa), and Pomona irrigation settlements, N.S.W. *Aust. Council Sci. Indust. Res. Bull.* 107, 1937, pp. 47.
- (945) 631.4:581.5—Patton, R. T. Ecological studies in Victoria. Pt. IV. Basalt plains association. *Proc. Roy. Soc. Victoria* 48, 1936 (172-190).
- (945) 631.43:551.311.31—Patton, R. T. Ecological studies in Victoria. III. Coastal sand dunes. *Proc. Roy. Soc. Victoria* 47, 1934 (135-157). *Biol. Abs.* 11 (572).
- (945) 631.445.53—Penman, F. Clay-pan and buck-shot soils of a Goulburn Valley area. *J. Dept. Agric. Victoria* 34, 1936 (364-376).
- (945) 631.459—Galbraith, A. V. Soil erosion and allied problems. *Fourth B.E. Forestry Conf. S. Africa* 1935, pp. 13.
- (945) 631.466.3—Phillipson, J. Some algae of Victorian soils. *Proc. Roy. Soc. Victoria* 47, 1935 (262-287).
- (945) 631.67—Lyon, A. V. Irrigation development in Australia with special reference to irrigation settlements of the State of Victoria. *Emp. J. Expt. Agric.* 4, 1936 (129-135).
- (945) 633.1-1.84—*Journal of the Department of Agriculture, Victoria*. Nitrogenous fertilizers. *J. Dept. Agric. Victoria* 33, 1935 (194-198).
- (945) 633.2.03-1.44—Leeper, G. W.; Nicholls, A.; Wadham, S. M. Soil and pasture studies in the Mount Gellibrand area, Western district of Victoria. *Proc. Roy. Soc. Victoria* 49, 1936 (77-134).
- (945) 633.2.03-1.81—Twentyman, R. L. Seasonal growth of Victorian pastures. The influence of artificial fertilizers. *J. Dept. Agric. Victoria* 33, 1935 (53-62).
- (945) 633.491-1.81—Ramsay, J. T. Manurial trials on potatoes. Results for 1934-5. *J. Dept. Agric. Victoria* 33, 1935 (492-495, 555-560).
- (945) 633.491-1.81—Ramsay, J. T. Manurial trials on potatoes. Results for 1935-36. *J. Dept. Agric. Victoria* 34, 1936 (597-601).
- (945) 633.71-1.81—McDonald, W. J. B. Tobacco investigations. Results of experimental work, 1934-35. *J. Dept. Agric. Victoria* 33, 1935 (473-481, 521, 542-547).

# BIBLIOGRAPHY OF SOIL SCIENCE

- (945) 634.3-1.4—Penman, F. Soil conditions at Bamawm and Ballendella in relation to citrus growth. *J. Dept. Agric. Victoria* 34, 1936 (399-431).
- (946) 631.4 : 552.323.5—Stephens, C. G. The basaltic soils of Northern Tasmania. *Aust. Counc. Sci. Indust. Res. Bull.* 108, 1937, pp. 39.
- (946) 633.2.03-1.58—Tasmanian Journal of Agriculture. Experimental work of pasture establishment on light red soils of N.E. and N.W. coast areas. *Tasmanian J. Agric.* 6, 1935 (128-130).
- (946) 633.71-1.81—Malcolm, D. H. Tobacco manurial trial. Season 1934-35. *Tasmanian J. Agric.* 7, 1936 (64-72).
- (946) 634.11-1.4—Stephens, C. G.; Taylor, J. K. The apple-growing soils of Tasmania. *Aust. Counc. Sci. Indust. Res. Bull.* 92, 1935, pp. 55.
- (95) 633.74-1.4—Green, E. C. D. The possibility of developing an economic cacao industry in the mandated territory of New Guinea after a study of the industry in Trinidad, and a suggested policy for that development. *N. Guinea Dept. Agric. Bull.* 2 (Leaf. 70), 1934, pp. 72.
- (961) 631.62—Clarke, H. F. Drainage methods in Fiji. *Abstr. Pap. 5th Cong. Int. Soc. Sug. Cane Tech. Agric. Sect. Australia* 1935. *Hawaii. Plant. Rec.* 39, 1935 (287).
- (969) 631.422—Conant, R. K. Soil analyses by rapid chemical methods at Oloa Sugar Company, Ltd. *Repts. Assoc. Hawaii. Sug. Tech. Fifteenth Ann. Meet.* 1936 (51-53).
- (969) 631.422—Hossack, A. T. Rapid chemical methods regarding soil fertilization—the importance of collecting representative soil samples. *Repts. Assoc. Hawaii. Sug. Tech. Fifteenth Ann. Meet.* 1936 (55-60).
- (969) 631.422—Taylor, H. W. The practical application of rapid chemical analyses at Pioneer Mill Company, Ltd. *Repts. Assoc. Hawaii. Sug. Tech. Fifteenth Ann. Meet.* 1936 (73-79).
- (969) 631.81—Moir, W. W. G. A fertilizer policy developed with the aid of experiments. *Hawaii. Plant. Rec.* 39, 1935 (109-112).
- (969) 633.73-1.5—Ripperton, J. C.; Goto, Y. B.; Pahau, R. K. Coffee cultural practices in the Kona district of Hawaii. *Hawaii. Agric. Expt. Sta. Bull.* 75, 1935, pp. 64.
- (969) 634.774-1.5—Duthie, J. Pineapple growing in Hawaiian Islands. *Queensland Agric. J.* 45, 1936 (182-186).
- (98) 631.4—Liverovsky, Yu. Soils of the extreme North and their chemism. *Khim. Sotsial. Zvezd.* No. 3, 1937 (61-68). [R.]
- (98) 631.445.2—Chekalov, K. I. The agricultural chemical characterization and the physical properties of some mineral soils of the Polar regions. *Trudy LOVI'LL*, No. 37 (No. 1), 1935 (159-192). *Pedology* 1936 (929). [R.]
- (98) 631.461—Isachenko, B. L.; Simakova, T. L. Bacteriological investigations of arctic soils. *Trudy Arkt. Inst.* 9, 1934 (107-124). *Pedology* 1936 (164).
- (98) 631.48—Gripp, K.; Simon, W. G. The experimental preparation of "Brodeboden". *Naturwissenschaften* 22, 1934 (8). *Z.P.D.* 28 (379).

## LIST OF ABBREVIATIONS OF JOURNALS AND PERIODICALS\*

[The abbreviation is followed by the full title of the journal and place of publication (where known)].

- A.C.L.** See Abs. Curr. Lit. Agric. Engng.
- Abs. Curr. Lit. Agric. Engng.** Abstracts of Current Literature. Institute for Research in Agricultural Engineering. Oxford.
- Acad. Sci. U.S.S.R. SOPS.** Academy of Sciences (Sovet po Izucheniu Proizvoditel'nykh Sil) Soviet for the Study of Productive Forces. U.S.S.R.
- Acta Soc. Bot. Polon.** Acta Societatis Botanicorum Poloniae. Warsaw.
- Acta Univ. Asiae Med.** Acta Universitatis Asiae Mediae Series VII d. Pedologia (Trudy Sredne-Asiatskogo Gosudarstvennogo Universiteta. Seria VII d. Pochvovedenie). Tashkent.
- Afric. Observer.** African Observer. Bulawayo, S. Rhodesia.
- Agric. Chron.** Worcestershire Agricultural Quarterly Chronicle. Worcester.
- Agric. Libica.** Agricoltura Libica. Bollettino Mensile del Ro. Ufficio Centrale per i Servizi Agrari della Libia. Tripoli.
- Agric. Sci. Kazakstan.** Agricultural Science in Kazakstan. U.S.S.R.
- Agric. Suppl. Palestine Gaz.** Agricultural Supplement to the Palestine Gazette, Department of Agriculture and Fisheries, Jerusalem.
- Agricoltura, Louvain.**
- Agricoltura, Madrid.**
- Agronomía, B. Aires.** Buenos Aires.
- Agronomía, Tartu.** Estonian Journal of Agricultural Science (Society of Estonian Agronomists and the Academic Agricultural Society). Tartu, Estonia.
- Amer. Gas. Assoc. Mo.** American Gas Association Monthly. New York.
- Amer. J. Pharm.** American Journal of Pharmacy. Philadelphia.
- Amer. J. Pub. Health.** American Journal of Public Health and the Nation's Health. New York.
- Amer. Min.** American Mineralogist. Washington, D.C.
- Amer. Rose Ann.** American Rose Annual. Harrisburg, Pa.
- Amer. Soc. Test. Mat. Bull.** American Society for Testing Materials. Bulletin. Philadelphia, Pa.
- An. Soc. Españ. Fís. Quím.** Anales de la Sociedad Española de Física y Química. Madrid.
- An. Fac. Filos. Univ. Chile.** Santiago.
- Ann. Bot. Vanamo.** Annales Botanici Societatis Zoologicae-Botanicæ Fennicae Vanamo. Helsingfors.
- Ann. Chim. Anal.** Annales de Chimie Analytique. Paris.
- Ann. Eugenics.** Annals of Eugenics. Cambridge.

\* Only abbreviations not used in the earlier Bibliography (1931-1934) are included in this list.

# ABBREVIATIONS OF JOURNALS AND PERIODICALS

- Ann. Hyg. Publ. Paris.** Annales d'Hygiène Publique et de Médecine Légale (Industrielle et Sociale). Paris.
- Ann. Ist. Agrar. Milano.**
- Ann. Ist. Sup. Agrar. Portici.** Annali del Istituto Superiore Agrario di Portici.
- Ann. Rev. Biochem.** Annual Review of Biochemistry. Stanford University, Palo Alto.
- Ann. Sci. Nat.** Annales des Sciences Naturelles. Paris.
- Ann. Univ. Sofia.** Annuaire de l'Université de Sofia (Godishnik na Sofiiska Universitet). Sofia, Bulgaria.
- Anzeiger Schädling.** Anzeiger für Schädlingkunde. Berlin.
- Arb. Inst. Landw. Mikrobiol.** See Trudy Inst. S.-Kh. Mikrobiol.
- Arb. Landw. VersSta. Kiev.** See Trudy Kiev. Opyt. S.-Kh. Sta.
- Arch. Fitotec. Uruguay.** (Herb. Abs.).
- Arch. Hyg. Bakt.** Archiv für Hygiene (und Bakteriologie). München.
- Arch. Protistenk.** Archiv für Protistenkunde. Jena.
- Arq. Inst. Biol. Veget.** Arquivos do Instituto de Biologia Vegetal. Rio de Janeiro.
- Arxius.** (C.A.).
- Assoc. Franç. Avanç. Sci. Cong. Rabat.**
- Atti Soc. Ital. Prog. Sci.** Atti della Società Italiana per il Progresso delle Scienze. Rome.
- Aust. Forestry.** Australian Forestry. The Journal of the Institute of Foresters of Australia.
- Aust. Tobacco Investig. Bull.** Australian Tobacco Investigations. Bulletin.
- Aust. Vet. J.** Australian Veterinary Journal. Sydney.
- B.I.I.** Bulletin of the Imperial Institute. London.
- B.W.I. Cent. Sug. Cane Br. Sta. Bull.** West Indies Central Sugar Cane Breeding Station. Bulletin. Bridgetown, Barbados.
- Bad. Bauernstand.** Badischer Bauernstand.
- Bad. Geog. Abh.** Badische Geographische Abhandlungen. Freiburg im Breisgau.
- Bautech.** Bautechnik. Berlin.
- Better Crops with Plant Food.** Washington, D.C.
- Bioklim. Beibl. Met. Ztschr.** Bioklimatische Beiblätter der Meteorologischen Zeitschrift. Braunschweig.
- Biol. Reichsanst. Flugbl.** Biologische Reichsanstalt für Land und Forstwirtschaft. Flugblatt. Berlin.
- Biol. Rev.** Biological Reviews of the Cambridge Philosophical Society. Cambridge.
- Biol. Zbl.** Biologisches Zentralblatt. Leipzig.
- Bl. PflBau. PflZücht.** Blätter für Pflanzenbau und Pflanzenzüchtung. (Zeitschrift des Deutschen Saatzüchtervereins für die Tschechoslowakei in Tetschen a. Elbe, Böhmen). Tetschen-Liebewerdt, Czechoslovakia.
- Black Rock Forest Bull. (or Pap.).** Black Rock Forest Bulletin (or Paper). Cornwall-on-the-Hudson, New York.
- Bodenk. PflErnähr.** Bodenkunde und Pflanzenernährung. Formerly Zeitschrift für Pflanzenernährung, Düngung und Bodenkunde. Berlin.
- Bol. Agric. Bogotá.** Boletín de Agricultura. Bogotá.
- Bol. Inst. Investig. Agron. Madrid.** Boletín del Instituto de Investigaciones Agrícolas. Madrid.

# ABBREVIATIONS OF JOURNALS AND PERIODICALS

- Bol. Min. Agric. Rio de J.** Boletim do Ministerio da Agricultura, Industria e Commercio. Rio de Janeiro.
- Bol. Soc. Quím. Peru.** Boletín de la Sociedad Química del Peru. Lima.
- Boll. Tec. Ist. Sper. Tab. Scafati.** Bollettino Tecnico R. Istituto Sperimentale per le Coltivazioni dei Tabacchi "Leonardo Angeloni". Scafati (Salerno).
- Boll. Uff. Agrar. Tripolit.** Bollettino. Reale Ufficio per i Servizi Agrari della Tripolitania. Tripoli.
- Bot. Rev.** Botanical Review. New York.
- Bot. Zh.** Botanichesky Zhurnal (Botanical Journal). Leningrad.
- Brit. Sci. Guild Pub.** The British Science Guild Publication. London.
- Brit. Solomon Is. Agric. Gaz.** British Solomon Islands Protectorate Agricultural Gazette. Tulagi.
- Bul. Sci. Fakult. Terkult. Kjusu Imp. Univ.** Bulteno Ciencia de la Fakultato Terkultura, Kjusu Imperio Universitato. Fukuoka, Japan.
- Bull. Acad. Méd. Paris.** Bulletin de l'Académie de Médecine. Paris.
- Bull. Acad. Roy. Belge.** Bulletin de l'Académie Royale de Belgique. Brussels.
- Bull. Acad. Sci. (U.S.S.R.) (Cl. Sci. Math.) Biol. Ser.** Bulletin de l'Académie des Sciences de l'Union des Républiques Soviétiques Socialistes. Classe des Sciences Mathématiques et Naturelles. Série Biologique (Izvestia Akademii Nauk). Moscow.
- Bull. Agric. Martinique.** Bulletin Agricole Service de l'Agriculture de la Martinique. Port-de-France.
- Bull. Agric. Tunis.** Bulletin de la Direction de l'Agriculture, du Commerce et de la Colonisation. Tunis.
- Bull. Assoc. Chim.** Formerly Bull. Assoc. Chim. Sucr.
- Bull. Coll. Agric. Forest. Univ. Nanking.** Bulletin of the College of Agriculture and Forestry University of Nanking.
- Bull. Geol. Soc. Amer.** Bulletin of the Geological Society of America. New York.
- Bull. Geol. Soc. China.** Bulletin of the Geological Society of China. Peking.
- Bull. Hydro-Electric Power Comm. Ontario.** (E.S.R.).
- Bull. Inst. Colon. Havre.** Bulletin de l'Institut Colonial du Havre. Bulletin Mensuel. Havre.
- Bull. Inst. Colon. Marseille. Mat. Grasses.** Bulletin de l'Institut Colonial de Marseille. Section des Matières Grasses. Marseille.
- Bull. Moscow Soc. Nat.** Bulletin of the Moscow Society of Naturalists (Bulletin Moskovskogo Obshchestva Ispytatelei Prirody). Leningrad.
- Bull. Soc. Bot. Bulgarie.** Bulletin de la Société Botanique de Bulgarie. Sofia.
- Bull. Soc. Geol. Fr.** Bulletin de la Société Géologique de France. Paris.
- Bull. Soc. Nat. Hort. Fr.** Bulletin de la Société Nationale d'Horticulture de France. Paris.
- Bull. Soc. Pharm. Bordeaux.** Bulletin des Travaux de la Société de Bordeaux.
- Bull. Sochl Zonal Fruit Expt. Sta. U.S.S.R.**
- Bull. SoiuZNIKhl.** Bulletin of the Cotton Research Institute. Tashkent.
- Bull. Sredneaz. Univ.** Bulletin Sredne-Asiatskogo Gosudarstvenno Universiteta



# ABBREVIATIONS OF JOURNALS AND PERIODICALS

- (Bulletin de l'Université de l'Asie Centrale). Tashkent.
- Bull. Syndicat Algérien Agrumes.** Bulletin Syndicat Algérien des Agrumes. Alger.
- Bur. Mines Rept. Investig.** Bureau of Mines. Reports of Investigations. Washington, D.C.
- Burma Agric. Surv.** Department of Agriculture, Burma. Agricultural Survey. Rangoon.
- C.A.C.** Colonial Advisory Council. London.
- C.A.S.B.** Central Agricultural and Scientific Bibliography. Science Library. London.
- C.M.R.** Current Monthly Record. Imperial Forestry Institute. Oxford.
- C.R. Cong. Int. Géog. Paris.** Comptes Rendus du Congrès International de Géographie. Paris.
- C.R.E.A. News Letter Chicago.** (E.S.R.)
- C.R. Trav. Inst. Rech. Agron. Indochine.** Comptes Rendus des Travaux de l'Institut de Recherches Agronomiques de l'Indochine. Hanoi.
- Calif. Sug. Beet Conf. Sacramento.** California Sugar Beet Conference. Sacramento.
- Campesino.** Organo Oficial de la Sociedad Nacional de Agricultura. Santiago de Chile.
- Campo, Brazil.** O Campo. Agricultura, Industria, Comercio. Rio de Janeiro.
- Canada Dept. Agric. Pub.** Dominion of Canada. Department of Agriculture. Publication. Ottawa.
- Carnegie Instn. News Serv. Bull.** Carnegie Institution of Washington. News Service Bulletin. Washington, D.C.
- Cement. Cement and Cement Manufacture.** London.
- Cent. Landown. Assoc. J.** Central Landowners' Association. Journal. London.
- Ceylon Dept. Agric. Bull.** Ceylon Department of Agriculture. Bulletin. Colombo.
- Chem. Fabr.** Die Chemische Fabrik (Teil B. Zeitschrift des Vereins Deutscher Chemiker). Berlin.
- Chem. Indust.** Chemistry and Industry. (Formerly Journal of the Society of Chemical Industry). London.
- Chem. Obzor.** Chemický Obzor. Prague.
- Chem. Trade J.** Chemical Trade Journal and Chemical Engineer. Manchester.
- Chemistry, China.** Nanking.
- Chim. Indust. Modena.** Chimica nell'Industria, e Altre sue Applicazione (nell'Agricoltura e nella Biologia). Modena.
- China J.** The China Journal. (Formerly China Journal of Science and Arts). Shanghai.
- Citrus Grower.** Uitenhage, S. Africa.
- Citrus Leaves.** (Mutual Orange Distributors). Redlands, California.
- Commonwealth Forestry Bur. Bull.** Australian Commonwealth Forestry Bureau. Bulletin. (Sydney?)
- Commun. Conseil Rech. Sci. Indochine.** Communication au Conseil de Recherches Scientifiques de l'Indochine. Hanoi.
- Commun. Int. Hort. Cong. Rome.** Communications of the International Horticultural Congress. Rome.
- Cong. Chim. Indust.** Congrès de Chimie Industrielle. Société de Chimie Industrielle. Paris.
- Cong. Int. Chim. Pure Appl.** Congrès International de Chimie Pure et Appliquée. Madrid.

## ABBREVIATIONS OF JOURNALS AND PERIODICALS

- Cong. Int. Génie Rural Pub. Agric.** Congrès International de Génie Rural. Publication Agricole. Madrid.
- Cong. Int. Mines Métall. Géol. Appl. Paris. Geol. Sect.** Congrès International des Mines, de la Metallurgie et de la Géologie Appliquée. Geological Section. Paris.
- Cong. Int. Tech. Chim. Indust. Agric.** Congrès International Technique et Chimique des Industries Agricoles. Brussels.
- Čsl. Zeměd.** Československý Zemědělec. Prague.
- Dansk. Bot. Ark.** Dansk Botanisk Arkiv. Copenhagen.
- Date Grow. Inst. Ann. Rept.** Date Growers Institute, Annual Report. Coachella, California.
- Del. St. Bd. Agric. Bull.** Delaware State Board of Agriculture. Bulletin. Dover, Delaware.
- Derbysh. Fmr.** Derbyshire Farmer. Derby.
- Deut. Forsch.** (Z.P.D.)
- Deut. LandeskZtg.** Deutsche Landeskultur-Zeitung. Berlin.
- Deut. Landw. Tierz.** Deutsche Landwirtschaftliche Tierzucht. Hannover.
- Dokuchaev Inst. Studies Genesis Geography Soils.** Dokuchaev Soil Institute. Studies of the Genesis and Geography of Soils. Academy of Sciences Press. Moscow.
- E. Afric. Agric. J.** East African Agricultural Journal. Nairobi.
- E. Afric. Agric. Res. Sta. Amari Pub.** East African Agricultural Research Station, Amari. Publication. Dar-es-Salaam.
- Econ. Tec. Agric. Madrid.** Economica y Técnica Agrícola. Madrid.
- Egypt Hort. Sect. Leaflet.** Ministry of Agriculture, Egypt. Leaflet Horticultural Section. Giza.
- Electrif. Selsk. Khoz.** Elektrifikatsiya Selskogo-Khozia-stva. Moscow.
- Emp. Cott. Grow. Corp. Conf. Rept.** Empire Cotton Growing Corporation Conference. Report. London.
- Engineer, London.** The Engineer (with Metallurgical Supplement). London.
- Engng. Contract Rec.** Engineering and Contract Record. Toronto.
- Engng. News-Rec.** Engineering News-Record. New York.
- Erdész. Kisérl.** Erdészeti Kísérletek. Forstliche Versuche. Forest Researches. Recherches Forestières. Sopron, Hungary.
- Erdész. Lapok.** Erdészeti Lapok. Budapest.
- Estac. Expt. Agric. Tucumán Circ.** Estación Experimental Agrícola de Tucumán. Circular. Tucumán, Argentine.
- Farm. Res.** Farm Research. New York Agricultural Experiment Station. Geneva.
- Farm. Week. S. Africa.** Farmer's Weekly. Bloemfontein.
- Farmer.** St. Paul, Minnesota.
- Forestry Chronicle.** Canadian Society of Forest Engineers. Knowlton, Quebec, Canada.
- ForschDienst.** Forschungsdienst. Formerly Deutsche Landwirtschaftliche Rundschau. Berlin.
- Forstl. Vers.** Forstliche Versuche. See Erdész. Kisérl.
- Fruit-Grower.** London.
- Fruit Products J.** The Fruit Products Journal and American Vinegar Industry. New York.
- Fruits Primeurs.** Revue Marocaine des Fruits et Primeurs

# ABBREVIATIONS OF JOURNALS AND PERIODICALS

- de l'Afrique du Nord.** Since 1937: Fruits et Primeurs de l'Afrique du Nord et la Revue Française de l'Oranger. Casablanca.
- Fuel.** Fuel (in Science and Practice). London.
- Gard. Chron.** Gardener's Chronicle. London.
- Gartenbauwirt.** Die Gartenbauwirtschaft. Berlin.
- Gas.** Formerly Western Gas. Los Angeles.
- Geog. J.** Geographical Journal. (Royal Geographical Society). London.
- Geography.** London.
- Georgofili.** Atti della R. Accademia dei Georgofili. Florence.
- Gesund. Tech. Stadehyg.** (Gesundheits - Ingenieur. Zeitschrift für die Gesamte Städtehygiene. Munich ?)
- Gifu Imp. Coll. Agric. Res. Bull.** Gifu Imperial College of Agriculture. Research Bulletin. Gifu, Japan.
- Gold Coast Farmer.** Accra.
- Gordian.** Hamburg.
- Hassadeh.** (Organization of Agricultural Labourers in Palestine). Tel-Aviv.
- Herb. Revs.** Herbage Reviews. Aberystwyth.
- Hort. Educ. Assoc. Yrbk.** See Sci. Hort.
- Husbandry.** Norwich.
- Hydrochem. Materialien U.S.S.R.** Hydrochemische Materialien U.S.S.R. (Hydrokhimicheskije Materialy). Kostov-on-Don.
- Hydrotekh. Stroit.** Hydrotekhnicheskoe Stroitel'stvo. Moscow.
- Imp. Bur. Soil. Sci. Tech. Commun.** Imperial Bureau of Soil Science. Technical Communication. Harpenden, England.
- Imp. Counc. Agric. Res. Misc. Bull.** Imperial Council of Agricultural Research. Miscellaneous Bulletin. Delhi.
- Imp. Forestry Inst. Pap.** Imperial Forestry Institute. Paper. Oxford.
- Indian Engng.** Indian Engineering. Calcutta.
- Indian Forest Rec. Sylvicult.** Indian Forest Records. Sylviculture. Calcutta.
- India-Rubber J.** India-Rubber Journal. London.
- Indian Med. Gaz.** Indian Medical Gazette. Calcutta.
- Inst. Agron. São Paulo Bol. Tech.** Secretaria da Agricultura Industria e Comercio do Estado de São Paulo. Instituto Agronomico de Campinas. Boletim Technico. São Paulo.
- Inst. Bolot. Khoz. Minsk.** Vsesouzny Institut Bolotnogo Khoziastva Minsk (All-Union Bog Institute). Moscow.
- Inst. Brit. Geog. Pub.** The Institute of British Geographers. Publication. London.
- Inst. Geol. Român. Stud. Tech.** Institutul Geologic al României. Studii Technice si Economice. Bucharest.
- Inst. Kallit. Fyton Thessalonike Epist. Delt.** (E.S.R.)
- Inst. Nat. Et. Agron. Congo Belge, Ser. Sci. Pub.** Institut National pour l'Étude Agronomique du Congo Belge. Série Scientifique. Publications. Brussels.
- Inst. Tab. Makh. Prom.** Institut Tabachnoi i Makhrochnoi Promyshlennosti (Institute of the Tobacco and Makhorka Industry). Krasnodar.
- Int. Cong. Sci. Management.** International Congress of Scientific Management. Washington, D.C.

# ABBREVIATIONS OF JOURNALS AND PERIODICALS

- Int. Rev. Hydrobiol.** Internationale Revue der Gesamten Hydrobiologie und Hydrographie. Leipzig.
- Iowa Engng. Expt. Sta.** Iowa State College of Agriculture and Mechanic Arts, Engineering Experiment Station. Bulletin. Ames, Iowa.
- Izv. Biol. Geol. Inst. Irkutsk. Univ.** (Pedology).
- Izv. Biol. Inst. Perm.** Izvestia Biologicheskogo Nauchno-Issledovatel'skogo Instituta pri Permskom Gosudarstvennom Universitete imeni M. Gor'kogo (Bulletin of the Institute of Biological Research). Perm.
- Izv. Kubyshvskogo S.-Kh. Inst.** Izvestia Kubyshvskogo Sel'sko-Khoziastvennogo Instituta (Bulletin of the Kubyshv Agricultural Institute). U.S.S.R.
- Izv. Severokavkaz. Inst. Hydrotekh.** Izvestia Severokavkazskogo Instituta Hydrotekhniki (Bulletin of the North Caucasian Institute for Hydrotechnique). U.S.S.R.
- J. Agric. Assoc. China.** Journal of the Agricultural Association of China. Nanking.
- J. Agric. P. R.** Journal of Agriculture of the University of Puerto Rico. Rio Piedras.
- J. Amer. Pharm. Assoc.** Journal of the American Pharmaceutical Association. Washington, D.C.
- J. Amer. Water Works Assoc.** Journal of the American Water Works Association. New York.
- J. Assoc. Chinese Amer. Engrs.** Journal of the Association of Chinese and American Engineers. Peking.
- J. Aust. Inst. Agric. Sci.** The Journal of the Australian Institute of Agricultural Science.
- J. Boston Soc. Civil Engrs.** Journal of the Boston Society of Civil Engineers. Boston.
- J. Chem. Educ.** Journal of Chemical Education. Easton, Pa.
- J. Chin. Chem. Soc.** Journal of the Chinese Chemical Society. Peiping.
- J. Dept. Agric. I.F.S.** Journal of the Department of Agriculture. Irish Free State. Dublin.
- J. Fabr. Sucre.** Journal des Fabricants de Sucre. Paris.
- J. Franklin Inst.** Journal of the Franklin Institute. Philadelphia.
- J. Geol.** Journal of Geology. Chicago.
- J. H. B.** Jealott's Hill Agricultural Research Bulletin. I.C.I. Bracknell, Berks.
- J. Helminth.** Journal of Helminthology. London.
- J. Hort. Assoc. Japan.** Journal of the Horticultural Association of Japan. Tokyo.
- J. Hort. Suisse.**
- J. Hyg.** Journal of Hygiene. Cambridge.
- J. Indian Bot. Soc.** Journal of the Indian Botanical Society. Madras.
- J. Japan. Assoc. Advanc. Sci.** Journal Japanese Association for the Advancement of Science.
- J. Landw. Riga.** (Bied. Zbl.)
- J. Nutrit.** Journal of Nutrition. Baltimore.
- J. Proc. Aust. Chem. Inst.**
- J. Proc. Roy. Soc. N.S. Wales.** Journal and Proceedings of the Royal Society of New South Wales. Sydney.
- J. Sci. Instrum.** Journal of Scientific Instruments. London.
- J. Sci. Iowa St. Coll.** Journal of Science, Iowa State College. Ames, Iowa.
- J. Soc. Chem. Indust.** Journal of the Society of Chemical Industry. London.

# ABBREVIATIONS OF JOURNALS AND PERIODICALS

- Jahresber. Schles. Ges. Vaterl. Cult.** Jahresbericht der Schlesischen Gesellschaft für Vaterländische Cultur. Breslau.
- Jamaica Dept. Sci. Agric. Bull.** Department of Science and Agriculture, Jamaica. Bulletin. Kingston.
- Japan Min. Agric. Lit. Agric. Improvements.** (Hort. Abs.).
- Junge Landw. Feld, Hof u. Garten.** (C.A.).
- Kalil.** Moscow, U.S.S.R.
- Karjatalous.**
- Kem. Maanedstbl.** Kemisk Maanedstblad og Norges Handelsblad for Kemisk Industri. Copenhagen.
- Kew Bull.** Bulletin of Miscellaneous Information. Royal Botanic Gardens, Kew. London.
- Kolloid. Zh.** Kolloidny Zhurnal. Zhurnal Teoreticheskoi i Prikladnoi Khimii i Fiziki (Colloid Journal. Journal of Theoretical and Applied Physics and Chemistry). Voronezh.
- Konservaia Prom.** Konservnaia Promyshlennost (Canning Industry). Moscow.
- Korte Meded. BoschbProefsta. Groningen.** Korte Mededeelingen van het Boschbouwproefstation. Groningen.
- Lake States Forest Expt. Sta. Tech. Notes.** Lake States Forest Experiment Station. Technical Notes. University Farm, St. Paul, Minn.
- Landb. u. Tech.** Landbau und Technik. Berlin.
- Landenberg Laboratory, Pennsylvania.**
- Landeskultur.** Vienna.
- Landw. Masch.** (Z.P.D.).
- Landw. Zifragen. Csl. Akad. Landw.** (Z.P.D.).
- Latvian Forest Res. Sta. Reports.** Latvian Forest Research Station. Reports Latvijas Mežu Pētīšanas Stacijas Raksti. Mitteilungen der Forstlichen Versuchsanstalt Lettlands. Riga.
- Lavoura.** A Lavoura. Boletim da Sociedade Nacional de Agricultura. Rio de Janeiro.
- Legkie Metally.** (Light Metals). Moscow.
- Leningr. Univ. Uchen. Zap.** Leningrad University Uchenye Zapiski (Annals. Series of Geology, Soil Science and Geography). Leningrad.
- Lighter.** The Tobacco Service of the Department of Agriculture, Canada. Ottawa.
- Maat. Juk.** (B.C.A.).
- Mach. Agric. Equip. Rur.** Machinisme Agricole et Equipement Rural. Revue Mensuelle. Paris.
- Magyar Ampelol. Évkönyve.** Magyar Kir. Szőlő-és Borkazdasági Központi Kiserleti Alomes (Ampelologiai Intézet) Évkönyve (Annual of the Royal Hungarian Central Experiment Station for Vine and Oenological Research. (Ampelological Institute). Budapest.
- Malay. Forester.** Malayan Forester. Kuala Lumpur.
- Mater. Pozn. Gleb. Polsk.** Materjałow do Poznania Gleb Polskich. Pulawy.
- Mauritius Sugarcane Res. Sta. Bull.** Mauritius Sugarcane Research Station. Bulletin. Réduit.
- Medd. Kgl. LandtbrAkad. LantbrAvd.** Meddelande från Kungl. Landtbruksakademien Lantbruksavdelning. Stockholm.
- Medd. Stat. Met.-Hydrograf. Anst. Ser. Uppsat.** Meddelanden Statens Meteorologisk-Hydrografiska Anstalt. Serien Uppsatser. Sweden.

# ABBREVIATIONS OF JOURNALS AND PERIODICALS

- Meded. Alg. Proefsta. Avros Alg. Ser.** Mededeelingen van het Algemeen Proefstation der Avros. Algemeen Serie. Batavia.
- Meded. Cheribon Expt. Sta.** (Int. Sug. J.).
- Meded. LandbProefsta. Surinam.** Mededeelingen. Landbouwproefstation, Surinam. Paramaribo.
- Meld. Stat. Forsøkssta. Fjellbyggdene.** Melding fra Statens Forsøksstasjon for Fjellbyggdene. Oslo.
- Meld. Stat. Forsøksgård Forus.** Melding fra Statens Forsøksgård på Forus. Norway.
- Meld. Stat. Forsøksgård Voll.** Melding fra Statens Forsøksgård på Voll (Annual Report of the Voll State Experiment Farm). Norway.
- Meld. Stat. Forsøkssta. Møistad.** (Bied. Zbl.).
- Mem. Indian Inst. Sci.** Memoirs of the Indian Institute of Science. Bangalore.
- Mem. Lab. Pat. Batt. Ist. Agrar. Pisa.** (Memorie del Laboratorio di Patologia e Batt. del R. Istituto Agrario di Pisa ?)
- Met. Prat. La Meteorologia** Practica. Pubblicazione Bimenziale dell'Osservatorio di Montecassino. Subiaco. Montecassino. Italy.
- Metall u. Erz.** Zeitschrift für Metallhüttenwesen und Erzbau einschliesslich Aufbereitung. Halle (Saale).
- Météorologie.** (Société Météorologique de France). Paris.
- Mfg. Chem.** Manufacturing Chemist. London.
- Mich. Acad. Sci. Pap.** Papers from the Michigan Academy of Science, Arts and Letters. New York.
- Min. Agric. Advis. Leaflet.** Ministry of Agriculture and Fisheries. Advisory Leaflet. London.
- Miner. Udob.** Mineral'nye Udobrenia i insektofungisidy (Mineral Fertilizers and Insectofungicides). Scientific Institute of Fertilizers and Insectofungicides. Moscow.
- Missouri Bot. Gard. Bull.** Missouri Botanical Garden Bulletin. St. Louis.
- Mitt. Kali-Forsch. Anst.** Mitteilungen der Kali-Forschungsanstalt. Berlin.
- Mitt. Landw.** Mitteilungen der Landwirtschaft. *Formerly* Mitteilungen der Deutschen Landwirtschaftsgesellschaft. Berlin.
- Mühlenlab.** Mühlenlaboratorium. Leipzig.
- N. Guinea Dept. Agric. Bull.** Department of Agriculture, Territory of New Guinea, Rabaul. (Canberra ?)
- N. Guinea Agric. Gaz.** The New Guinea Agricultural Gazette, Department of Agriculture, Territory of New Guinea, Rabaul. Canberra.
- Nat. Pecan Assoc. Proc.** National Pecan Association. Bulletin containing Report of Proceedings of the Annual Convention. Mobile, Alabama.
- Nat. Univ. Chekiang Res. Pap.** National University of Chekiang. Research Papers. Chekiang, China.
- Naturalist.** London.
- Nature, Paris.** La Nature. Paris.
- Naturwiss. u. Landw.**
- Nauch. Plodovod. Michurinsk.** Nauchnoe Plodovodstvo (Scientific Fruitgrowing). Michurinsk, U.S.S.R.
- Nauch. Zap.** Nauchnye Zapiski po Sakharnoi Promyshlennosti (Scientific Notes on the Sugar Industry). *Formerly* Naukovi Zapiski z Sakharnoi Promyshlennosti.

# ABBREVIATIONS OF JOURNALS AND PERIODICALS

- Neb. Univ. Bull.** Nebraska University Bulletin. Lincoln, U.S.A.
- Neues Jahrb. Min. Geol.** Neues Jahrbuch für Mineralogie, Geologie u. Paläontologie. Stuttgart.
- Newfoundland Agric. Sect. Bull.**
- Norsk Havetid.** Norsk Havetidende. Oslo.
- Nuovi Ann. Agric.**
- Nuovo G. Bot. Ital.** Nuovo Giornale Botanico Italiano. Florence.
- Nutr. Abs.** Nutrition Abstracts. Aberdeen.
- Off. Reg. Agric. Midi.** Office Regionale Agricole du Midi. Bulletin Trimestriel. Marseille.
- Ohio Engng. Expt. Sta. Circ.** Ohio State University Engineering Experiment Station. Circular. Columbus, Ohio.
- Olivicoltura.** (Hort. Abs.).
- Onze Ploeg.** (Landbouwkundig Maandschrift). Louvain, Belgium.
- Orchard. N.Z.** Orchardist of New Zealand. Wellington.
- Oregon St. Hort. Soc. Ann. Rept.** Oregon State Horticultural Society. Annual Report. Portland, Oregon.
- Ortofrutticolt. Ital.** L'Ortofrutticoltura Italiana. Rome.
- Peru Esta. Expt. Agric. La Molina Inf.** Estación Experimental de Agricultura, La Molina. Informe. Lima, Peru.
- Petroleum, N.Y.** New York.
- Pflanzenbau.** Monatsschrift für den Gesamten Acker- und Pflanzenbau und das Pflanzenbauliche Versuchswesen. Leipzig.
- Phil. Trans.** Philosophical Transactions of the Royal Society. London.
- Philipp. Nat. Res. Council. Rept.** National Research Council, Philippines. Report. Manila.
- Philipp. Sug. Assoc. Rept. Res. Bur.** Philippine Sugar Association. Report of the Research Bureau. Manila.
- Physiol. Res.** Physiological Researches. Baltimore, Md.
- Physiol. Res. Makhorka Plants.**
- Pícinanárské Zpravy.** Czechoslovakia.
- Planter, Malaya.** (Incorporated Society of Planters). Kuala Lumpur.
- Planteur, Ile de la Réunion.** Le Planteur de l'Ile de la Réunion. Saint-Denis, Réunion.
- Plodoovoshchnoe Khoziastvo.** (Fruit and Vegetable Husbandry). Moscow.
- Polska Akad. Um. Prace Roln.-Leśne.** Polska Akademia Umiejętności Prace Rolnicz-Leśne. Krakow.
- Priroda.** (Nature). Academy of Sciences, Leningrad.
- Probl. Zhivotnov.** Problemy Zhivotnovodstva (Problems of Animal Husbandry). Moscow.
- Proc. Acad. Sci. Amsterdam.** Proceedings of the Royal Academy of Sciences of Amsterdam. Koninklijke Akademie van Wetenschappen te Amsterdam.
- Proc. Acad. Sci. U.P. India.** Proceedings of the Academy of Sciences of the United Provinces, India. Now, Proceedings of the National Academy of Sciences, India. Allahabad.
- Proc. Amer. Gas. Assoc.** Proceedings of the American Gas Association. New York.
- Proc. Amer. Petroleum Inst. Sect. IV.** Proceedings of the Annual (or Mid-Year) Meeting, American Petroleum Institute. Section IV. Production. New York City.

# ABBREVIATIONS OF JOURNALS AND PERIODICALS

- Proc. Ann. Cong. S. Afric. Sug. Tech. Assoc.** Proceedings of the Annual Congress of the South African Sugar Technologists' Association. Durban.
- Proc. Ann. Meetg. Comm. Fert. Amer. Soc. Agron.** Proceedings of the Annual Meeting of the Committee on Fertilizers of the American Society of Agronomy. Washington, D.C.
- Proc. Assoc. Econ. Biol. Coimbatore.** Proceedings of the Association of Economic Biologists, Coimbatore.
- Proc. Assoc. S. Agric. Workers.** Proceedings of the Annual Convention, Association of Southern Agricultural Workers. Atlanta, Ga.
- Proc. Conf. E. Afric. Agric. Chem.** Proceedings of the Conference of East African Agricultural and Soil Chemists. Nairobi.
- Proc. Cong. Agric. Sci. Riga.** Proceedings of the Congress of Agricultural Science. Riga.
- Proc. Cuban Sug. Tech. Assoc.** Proceedings of the Cuban Sugar Technologists Association. Havana.
- Proc. Hawaii. Acad. Sci. Bishop Mus. Spec. Pub.** Proceedings of the Hawaiian Academy of Science, Bernice P. Bishop Museum Special Publication.
- Proc. Imp. Acad. Tokyo.** Proceedings of the Imperial Academy. Tokyo.
- Proc. Indian Acad. Sci.** Proceedings of the Indian Academy of Sciences. Indian Institute of Science. Bangalore.
- Proc. Inst. Chem. India.**
- Proc. Int. Bot. Cong.** Proceedings of the International Botanical Congress.
- Proc. Int. Soc. Sug. Cane Tech.** Proceedings of the International Society of Sugar-Cane Technologists. Brisbane.
- Proc. Nat. Acad. Sci. India.** Proceedings of the National Academy of Sciences, India. *Formerly* Proceedings of the Academy of Sciences of the United Provinces, India. Allahabad.
- Proc. Nat. Inst. Sci. India.** Proceedings of the National Institute of Sciences of India. Calcutta.
- Proc. Pa. Acad. Sci.** Proceedings of the Pennsylvania Academy of Science. Harrisburg, Pa.
- Proc. Pacific Sci. Cong.** Proceedings of the Pacific Science Congress, Toronto.
- Proc. Phys. Soc.** Proceedings of the Physical Society. Cambridge.
- Proc. Queensland Soc. Sug. Cane Tech.** Proceedings of the Queensland Society of Sugar Cane Technologists. Brisbane.
- Proc. Roy. Geog. Soc. Aust.** Proceedings of the Royal Geographical Society of Australia. (Adelaide ?)
- Proc. Roy. Soc. Victoria.** Proceedings of the Royal Society of Victoria. Melbourne.
- Proc. S.-E. Pecan Grow. Assoc.** Proceedings of the Annual Convention of the South-Eastern Pecan Growers Association. Albany, Ga.
- Proc. S. W. Soil Water Conserv. Conf. Tex.** Proceedings of the South Western Soil Water Conservation Conference, Texas.
- Proc. Soc. Biol. Chem. India.** Proceedings of the Society of Biological Chemists, India. Bangalore.
- Proc. Soil Sci. Soc. Amer.** Proceedings of the Soil Science Society of America. Michigan.
- Proc. Va. Hort. Soc.** Proceedings of the Virginia Horticultural Society. (Staunton, Va. ?)



# ABBREVIATIONS OF JOURNALS AND PERIODICALS

- Proc. Wash. St. Hort. Assoc.** Proceedings of the Annual Meeting of the Washington State Horticultural Association. Washington.
- Protoplasma.** Leipzig.
- Public Works,** N.Y. New York.
- Quart. Bull. Mich. Agric. Expt. Sta.** Quarterly Bulletin of the Michigan Agricultural Experiment Station. East Lansing, Michigan.
- Quart. J. Geol. Soc. London.** Quarterly Journal of the Geological Society of London. London.
- Quart. Rev. Biol.** Quarterly Review of Biology. Baltimore, Md.
- Quebec Pomol. Fruit-Grow. Soc.** (B.C.A.).
- R.A.E.** Review of Applied Entomology. London.
- R.A.M.** Review of Applied Mycology. Kew, Surrey.
- Reaseheath Rev.** Reaseheath Review; a Journal of Cheshire Agriculture. Nantwich.
- Rec. Geol. Surv. India.** Records of the Geological Survey of India. Calcutta.
- Rec. Trav. Bot. Néerland.** Recueil des Travaux Botaniques Néerlandais. Société Botanique Néerlandaise. Nimègue.
- Rec. Trav. Chim.** Recueil des Travaux Chimiques des Pays-Bas et de la Belgique. Leiden.
- Rech. Fert. Sta. Agron. Douai.**
- Reichsamt f. Wetterdienst.** (Berlin ?)
- Rept. Govt. Sug. Expt. Sta. Tainan, Formosa.** Report of the Government Experiment Station, Tainan. Formosa, Japan.
- Repts. Assoc. Hawaii. Sug. Tech.** Reports of the Association of Hawaiian Sugar Technologists. Honolulu.
- Rev. Agric. Guadeloupe.** Revue Agricole. Organe du Service de l'Agriculture de la Guadeloupe et Dépendences. Pointe-à-Pître.
- Rev. Agric. Piracicaba (E. de S.-Paulo).** See Rev. Agric. S. Paulo.
- Rev. Agric. S. Paulo.** Revista de Agricultura. Piracicaba. (E. de São Paulo).
- Rev. Argent. Agron.** Revista Argentina de Agronomía. Organó de la Sociedad Argentina de Buenos Aires. Buenos Aires.
- Rev. Asoc. Rur. Uruguay.** Revista de la Asociación (Federación) Rural del Uruguay. Montevideo.
- Rev. Cafet. Colombia.** Revista Cafetera de Colombia. Bogotá.
- Rev. Cent. Estud. Agron., B. Aires.** Revista del Centro de Estudiantes de Agronomía. Buenos Aires.
- Rev. Chim. Indust.** Revue de Chimie Industrielle. Paris.
- Rev. Colon. Ital., Bologna.** Revista delle Colonie Italiane. Bologna.
- Rev. Dept. Nac. Prod. Animal. (Brazil).** Revista do Departamento Nacional da Producao Animal Instituto de Biologia Animal. Rio de Janeiro.
- Rev. Fac. Agron., B. Aires.** Revista de la Facultad de Agronomía y Veterinaria. Buenos Aires.
- Rev. Fac. Quím. Indust. Agric. Univ. Nac. Litoral.** Revista de la Facultad de Química Industrial y Agrícola (Universidad Nacional de Litoral). Santa Fé, Argentina.
- Rev. Farm. Argentina.** Revista Farmacéutica y Bioquímica Argentina. Buenos Aires.
- Revue de Géol.** Revue de Géologie et des Sciences Connexes. Liège.

# ABBREVIATIONS OF JOURNALS AND PERIODICALS

- Rev. Hort. Agríc. Afr. N.** Revue Horticole et Agricole de l'Afrique du Nord. Algiers.
- Rev. Int. Tabacs.** Revue Internationale des Tabacs. Paris.
- Rev. Madagascar.** Revue de Madagascar. Paris.
- Rev. Nac. Agric. Bogotá.** Revista Nacional de Agricultura. Bogotá, Colombia.
- Rev. Sci.** Revue Scientifique. Paris.
- Rhein. Mschr. Obstb.** Rheinische Monatsschrift für Obst-Garten- u. Gemüsebau. Bonn.
- Ricerca Sci. Roma.** La Ricerca Scientifica ed il Progresso Tecnico nell'Economia Nazionale. Rome.
- Rijkslandb.Proefsta. Akker-en Weideb. Groningen.** Rijkslandbouwprefstation Akker- en Weidebouw te Groningen. The Hague.
- Riv. Frutticolt.** Rivista di Frutticoltura. Ravenna.
- Rocz. Nauk Ogród.** Rocznik Nauk Ogródnichych (Annales des Sciences Horticoles). Warsaw.
- Rodriguésia.** Revista do Instituto de Biologia Vegetal, Jardim Botânico e Estação Biológica do Itatiaia. Rio de Janeiro.
- Roy. Agric. Soc. Egypt Chem. Sect. (or Tech. Sect.) Bull.** Royal Agricultural Society, Egypt. Chemical Section (or Technical Section). Bulletin. Cairo.
- S. Afric. Geog. J.** South African Geographical Journal. Pretoria.
- S. Africa Dept. Agric. Forestry Sci. Bull.** Union of South Africa, Department of Agriculture and Forestry. Scientific Bulletin. Pretoria.
- Sands Clays and Minerals.** Chatteris, England.
- Sborn. Masaryk. Akad. Práce.** Sbornik Masarykovy Akademie Práce (Collected Works of the Masaryk Academy of Work). Prague.
- Sborn. Rab. Azovo-Chernomorsk. S.-Kh. Inst.** Sbornik Rabot Azovo-Chernomorskogo Selsko - Khoziastvennogo Instituta (Collection of papers of the Azov-Black Sea Agricultural Institute). U.S.S.R.
- Sborn. Rab. Obsled. Pochv Abkhaz., Krasnodar.** Sbornik Rabot po Obsledovaniu Pochv Raionov Abkhazskoi SSR (Collected Papers on the Soils of the Abkhaz SSR). Krasnodar.
- Sborn. Rab. Perm. S.-Kh. Inst.** Sbornik Nauchno-Issledovatel'skikh Rabot Permskogo Selsko-Khoziastvennogo Instituta (Transactions of the Perm Agricultural Research Institute). Perm, U.S.S.R.
- Sborn. Rab. S. Kavkaz. Zern. Inst.** Sbornik Rabot Severno-Kavkazskogo Zernovogo Instituta (Transactions of the N. Caucasian Grain Institute). U.S.S.R.
- Sborn. Rab. VNIS.** Sbornik Rabot Nauchno-Issledovatel'skogo Instituta Sakharnoi Promyshlennosti (Collection of papers of the Sugar Research Institute). Moscow.
- Sborn. Uzbekistan.** (Pedology).
- Sborn. Vyzkum. Ústavu Zeměd. Čsl.** Sbornik Vyzkumných Ústavu Zemědělských Republiky Československé (Recueil de Travaux des Instituts des Recherches Agronomiques de la République Tchécoslovaque). Prague.
- Schweiz. Ztschr. Forstw.** Schweizerische Zeitschrift für Forstwesen. Bern, Switzerland.
- Schweiz. Ztschr. Obst- u. Weinb.** Schweizerische Zeitschrift für Obst- und Weinbau. Frauenfeld.

# ABBREVIATIONS OF JOURNALS AND PERIODICALS

- Sci. Hort.** Scientific Horticulture. The Journal of the Horticultural Education Association. *Formerly* the H.E.A. Year Book. London.
- Scot. Forestry J.** Scottish Forestry Journal. Edinburgh.
- S.C.S.—T.P.** United States Department of Agriculture Soil Conservation Service. Technical Publication. Washington, D.C.
- Semenovodstvo.** Now Selekt-sia i Semenovodstvo (Plant Breeding and Seed Production). Moscow.
- Siemens-Ztschr.** Siemens-Zeitschrift. Siemensstadt-bei-Berlin.
- Smithson. Misc. Coll.** Smithsonian Miscellaneous Collections. Washington.
- Soap.** New York.
- Soil Conservation.** Official Organ of the Conservation Service of the United States Department of Agriculture. Washington, D.C.
- Soils and Fertilizers, Hang-chow.**
- Sotsial. Rekonstr. S. Kh.** Sotsialisticheskaya Rekonstruktsia Selskogo Khoziastva (Socialist Reconstruction of Agriculture). Moscow.
- Sotsial. Zern. Khos.** Sotsialisticheskoe Zernovoe Khoziastvo (Socialistic Grain Farming). Saratov.
- Sovet. Bot.** Sovetskaya Botanika (Soviet Botany). Leningrad.
- Sovet. Sakhar.** Sovetsky Sakhar (Soviet Sugar). Moscow.
- Sovet. Subtrop.** Sovetskie Subtropiki (Soviet Subtropics). Moscow.
- Sprechsaal.** Sprechsaal für Keramik-Glas-Email. Fach und Wirtschaftsblatt für die Silikat-Industrien. Coburg, Germany.
- Sredneaz. Nauch. Inst. Khlopkov.** See Bull. Sredneaz. Nauch. Inst. Khlopkov.
- Sta. Sper. Granicolt.** "Benito Mussolini" Pub. Stazione Sperimentale di Granicoltura "Benito Mussolini". Pubblicazione. Catane, Italy.
- Stal.** (Steel). Kharkov.
- Sug. Beet J.** Sugar Beet Journal. Greeley, Colo.
- Suppl. J. Roy. Stat. Soc.** Supplement (Industrial and Agricultural Research Section). Journal of the Royal Statistical Society. London.
- Sveklovichnoe Polevodstvo** (Sugarbeet Husbandry). Moscow.
- Tabachnaia Prom.** Tabachnaia Promyshlennost (Tobacco Industry). Moscow.
- Te Kura Ngahere. N.Z.J. Forestry.** New Zealand Journal of Forestry. (New Zealand Institute of Foresters). Christchurch, New Zealand.
- Tea Res. Inst. Ceylon Bull.** Tea Research Institute of Ceylon. Bulletin. St. Coombs, Talawakelle.
- Tekn. Aikakauslehti.** Teknillinen Aikakauslehti (Technical Journal). Helsingfors.
- Texas St. Reclam. Dept. Bull.**
- Tidsskr. Landøkon.** Tidsskrift for Landøkonomi. Copenhagen.
- Trans. Amer. Soc. Civil Engrs.** Transactions of the American Society of Civil Engineers. New York.
- Trans. Brit. Mycol. Soc.** Transactions of the British Mycological Society. London.
- Trans. Ill. St. Hort. Soc.** Transactions of the Illinois State Horticultural Society. Salem, Ill.
- Trans. Kans. Acad. Sci.** Transactions of the Kansas Academy of Science. Manhattan, Kansas.

# ABBREVIATIONS OF JOURNALS AND PERIODICALS

- Trans. Ky. St. Hort. Soc.** Transactions of the Kentucky State Horticultural Society. Frankfort, Kentucky.
- Trans. Mendeleev Cong. Theor. Appl. Chem.** See Trudy Vsesoiuznogo Mendeleevskogo S'ezda.
- Trans. Northumb. Agric. Disc. Soc.** Transactions of the Northumberland Agricultural Discussion Societies. Newcastle-on-Tyne.
- Trans. Roy. Soc. N.Z.** Transactions and Proceedings of the Royal Society of New Zealand (*formerly* Transactions and Proceedings of the New Zealand Institute). Wellington.
- Trans. Roy. Soc. S. Africa.** Transactions of the Royal Society of South Africa. Cape Town.
- Trans. Roy. Soc. S. Aust.** Transactions of the Royal Society of South Australia. Adelaide.
- Trans. Sci. Soc. China.** Transactions of the Science Society of China. Shanghai.
- Trans. Soil Geobot. Inst. Tashkent.** Transactions of the Soil and Geobotanical Institute of the University of Central-Asia (Trudy Instituta Pochvovedeniia i Geobotaniki Sredne-Asiatskogo Gosudarstvennogo Universiteta). See also Acta Univ. Asiae Med. Tashkent.
- Trans. Soviet Sect. Int. Soc. Soil Sci.** Transactions of the Soviet Section of the International Society of Soil Science. Moscow.
- Trav. Soc. Nat. Leningr.** Travaux de la Société des Naturalistes de Leningrad (Trudy Leningradskogo Obshchestva Estestvoispytatelei). Leningrad.
- Trin. Tob. Dept. Agric. Bull.** Trinidad and Tobago Department of Agriculture. Bulletin. Port-of-Spain.
- Trinidad Sug. Cane Invest. Cttee. Ann. Rept.** The Sugar Cane Investigation Committee. Annual Report. Trinidad.
- Trudy Inst. Agrogrunt. Khem.** Trudy Naukovo Doslidnogo Institutu Agrogruntoznavstva te Khemizatsii S.-G. (Transactions of the Agricultural Institute of Soils and Chemistry). Kiev.
- Trudy Arkt. Inst.** Trudy Arkticheskogo Instituta (Transactions of the Arctic Institute). Leningrad.
- Trudy Belorussk. S. Kh. Inst.** Trudy Belorusskogo Selsko-Khoziastvennogo Instituta (Transactions of the White Russian Agricultural Institute). U.S.S.R.
- Trudy Biol. Inst. Perm.** Trudy Biologicheskogo Nauchno-Isledovatel'skogo Instituta pri Permskom Gosudarstvennom Universitete (Travaux de l'Institut Biologique de Perm). Perm.
- Trudy Geog.-Econ. Nauch.-Isled. Inst.** Trudy Geografo-Ekonomicheskogo Nauchno-Isledovatel'skogo Instituta (Transactions of the Geographo-Economic Research Institute). U.S.S.R.
- Trudy Inst. Hydrotekh.** Trudy Instituta Hydrotekhniki (Transactions of the Institute for Hydrotechnique). U.S.S.R.
- Trudy Inst. Konopli.** Trudy Instituta Konopli (VNIKO) (Transactions of the Hemp Institute). U.S.S.R.
- Trudy Inst. Nov. Lub. Syr.** Trudy Instituta Novogo Lubianogo Syr'ia (Transactions New Bast-Fibres Research Institute). Moscow.

# ABBREVIATIONS OF JOURNALS AND PERIODICALS

- Trudy Inst. Prikl. Mineral.** Trudy Instituta Prikladnoi Mineralogii (Transactions of the Institute of Economic Mineralogy). Moscow or Leningrad.
- Trudy Inst. S.-Kh. Mikrobiol.** Trudy Vsesoiuznogo Instituta Sel'skokhoziastvennoi Mikrobiologii (Bulletin of the State Institute of Agricultural Microbiology). Leningrad.
- Trudy Kiev. Opyt. S.-Kh. Sta.** Trudy Kievskoi Opytnoi Sel'sko-Khoziastvennoi Stantsii (Transactions of the Kiev Agricultural Experiment Station). Mironovka, Kiev.
- Trudy Komissii Irrigatsii.** Academy of Sciences U.S.S.R. Trudy Komissii po Irrigatsii (Transactions of the Irrigation Commission). Leningrad.
- Trudy Lomonosov. Inst. Geokhim.** Trudy Lomonosovskogo Instituta Geokhimii, Kristalografii i Mineralogii (Transactions of the Lomonosov Institute of Geochemistry, etc.). Moscow.
- Trudy LOVIUAA.** Trudy Leningradskogo Otdelenia Vsesoiuznogo Nauchno-Isledovatel'skogo Instituta Udobreniy, Agrotekhniki i Agropochvovedeniya imeni K. K. Gedroiza (Transactions of the Leningrad Department of the Gedroiz Institute of Fertilizers, etc.). Leningrad.
- Trudy Omsk. Inst. S.-Kh.** Trudy Omskogo Instituta Sel'skogo - Khoziastva (Transactions of the Omsk Agricultural Research Institute). Omsk.
- Trudy S.-Kh. Akad. Timiriaseva.** Trudy Selsko-Khoziastvennoi Akademii imeni Timiriaseva (Transactions of the Timiriasev Agricultural Academy). Moscow.
- Trudy Sekts. Fis. Pochv Fis.-Agron. Inst.** Trudy Sektsii Fiziki Pochv Fisiko-Agronomicheskoy Institut Akademii S.-Kh. Nauk imeni V. I. Lenina (Transactions of the Soil Physics Section of the Physico-Agronomical Institute of the Lenin Agricultural Academy). Leningrad.
- Trudy Torf. Inst.** Trudy Torfianogo Instituta (Transactions of the Peat Institute). U.S.S.R.
- Trudy Tsent. Sta. Ris. Khos.** Trudy Tsentralnoi Opytnoi Risovoi Stantsii (Transactions of the Central Rice Experiment Station). Krasnodar.
- Trudy TSINS.** Trudy Tsentralnogo Nauchno-Isledovatel'skogo Instituta Sakharnoi Promyshlennosti (Transactions of the Central Scientific Research Institute of the Sugar Industry). Moscow.
- Trudy Turkmen. Conf.** Trudy Turkmenkoi Konferentsii po Isucheniu Proisvoditel'nykh Sil (Transactions of the Turkmen Conference for the Study of Production). U.S.S.R.
- Trudy Viatskogo Vet. Inst.** Trudy Viatskogo Veterinarnogo Instituta (Transactions of the Viatka Veterinary Institute). U.S.S.R.
- Trudy VIUA.** Trudy Vsesoiuznogo Instituta Udobreniy, Agrotekhniki i Agropochvovedeniya imeni Gedroiza (Transactions of the Gedroiz Institute of Fertilizers and Soil Science). Moscow.
- Trudy VNIIL.** Trudy Vsesoiuznogo Nauchno-Isledovatel'skogo Instituta L'nianogo Khoziastva (Transactions of the All-Union Flax Research Institute). Torzhok, Moscow.
- Trudy Vsesoiuz. Mendeleev. S'ezda.** Trudy Vsesoiuznogo Mendeleevskogo S'ezda (Transactions of the Mendeleev Con-

# ABBREVIATIONS OF JOURNALS AND PERIODICALS

- gress of Theoretical and Applied Chemistry). Kharkov, Ukraine.
- Tunisie Agric.** Tunisie Agricole. Tunis.
- U.S.D.A. Forest Serv.** United States Department of Agriculture. Forest Service. Washington, D.C.
- U.S.D.A. Soil Conserv. Serv.** Tech. Pub. also SCS-TP United States Department of Agriculture. Soil Conservation Service. Technical Publication. Washington, D.C.
- U.S. Dept. Int. Soil Erosion Serv.** United States Department of the Interior. Soil Erosion Service. Washington, D.C.
- U.S. Pub. Health Engng. Abs.** United States Public Health Engineering Abstracts. Washington.
- Uchen. Zap. Moskov. Gosud. Univ.** Uchenye Zapiski. Moskovsky Gosudarstvennyy Universitet (Scientific Memoirs of Moscow State University). Moscow.
- Uchen. Zap. Saratov. Gosud. Univ.** Uchenye Zapiski Saratovskogo Gosudarstvennogo Universiteta imeni N. G. Chernyshevskogo (Scientific Memoirs of the University of Saratov). Saratov.
- Ugeskr. Landm.** Ugeskrift for Landmaend. Copenhagen.
- Univ. Minn. Agric. Ext. Div.** **Spec. Bull.** University of Minnesota Agricultural Extension Division. Special Bulletin.
- Uprawa Roslin i Nawozenie.** **Usp. Khim.** Uspekhi Khimii. Leningrad.
- Va. Fruit.** Virginia State Horticultural Society. Virginia Fruit. Staunton, Va.
- Va. Truck Expt. Sta. Bull.** Virginia Truck Experiment Station Bulletin. Norfolk, Va.
- Versl. Tech. Tarwe Comm.** Verslagen van de Technische Tarwe Commissie. Groningen.
- Vest. Akad. Nauk.** Vestnik Akademii Nauk (Bulletin of the Academy of Sciences). U.S.S.R.
- Vest. Dal'nev. Fil. Akad. Nauk SSSR.** Vestnik Dal'nevostochnogo Filiala Akademii Nauk S.S.S.R. (Bulletin of the Far Eastern Branch of the Academy of Sciences of the U.S.S.R.). Vladivostok.
- Vida Agric.** La Vida Agricola. Lima, Peru.
- Vineland Hort. Expt. Sta. Ontario Pub.** Vineland Horticultural Experiment Station, Ontario. Publication. Ontario.
- Vitim. Sborn. Rab. Sekt. Agrotech.** Vsesojuzny Nauchno-Isledovatel'skiy Institut Tabachnoi i Makhorochnoi Promyshlennosti (Vitim) Sbornik Rabot Sektora Agrotechniki i Khimizatsii (All-Union Scientific Institute of the Tobacco and Makhorka Industry, Collection of Papers of the Section of Agrotechnique and Chemisation). Krasnodar.
- Vort Landbr.** Vort Landbruk. Copenhagen.
- Wash. St. Coll. Res. Stud.\*** Washington State College Research Studies. Pullman, Washington.
- Wasserkr. u. Wirtsch.** Wasserkraft und Wasserwirtschaft. Munich.
- Wbl. Landesbauernsch. Bayern.**

# ABBREVIATIONS OF JOURNALS AND PERIODICALS

- Weidew. u. Futterbau.** Weidewirtschaft und Futterbau. Beilage zu Deutsche Landwirtschaftliche Tierzucht. Hannover.
- Welsh Pl. Br. Sta. Bull.** Welsh Plant Breeding Station. Bulletin. Aberystwyth.
- Western Constr. News.** Western Construction News. San Francisco.
- Western Gas.** *See* Gas.
- Wochenbl. Landesbl. Pomern.**
- Yale Univ. Sch. Forestry Bull.** Yale University, School of Forestry. Bulletin. New Haven, Yale University.
- Yedeoth.** Proceedings of the Agricultural Experiment Station. Rehoboth, Palestine.
- Z.A.C.** Zeitschrift für Analytische Chemie. Berlin.
- Zap. Vorohezh. S-Kh. Inst.** Zapiski Voronezhskogo Sel'sko-Khoziastvennogo Instituta (Notes of the Voronezh Agricultural Institute.). Voronezh, U.S.S.R.
- Zbl. Min. Geol.** Zentralblatt für Mineralogie, Geologie und Paläontologie. Abteilung A. Mineralogie; B. Geologie und Paläontologie. Stuttgart.
- Zeméd. Pokrok.** Zemědělské Pokrok. Prague.
- Zh. Geofiz.** Zhurnal Geofiziki (Geophysical Journal). Leningrad.
- Ztschr. Kristallog.** Zeitschrift für Kristallographie und Mineralogie. Leipzig.
- Ztschr. Landw. VersSta. Bulgarien.** Zeitschrift der Landwirtschaftlichen Versuchstation in Bulgarien (Spisanie na Zemedelskitye Opitni Instituti). Sofia.
- Ztschr. Phys. Chem. Unterr.** Zeitschrift für den Physikalischen und Chemischen Unterricht. Berlin.
- Ztschr. Spiritusindust.** Zeitschrift für Spiritusindustrie. Zeitschrift für Stärke- und Trocknungs- Industrie. Berlin.
- Ztschr. Weltforstw.** Zeitschrift für Weltforstwirtschaft. Review of World's Forestry. Neudamm and Berlin.
- Ztschr. Wirtschaftsgruppe Zuckerindust.** Zeitschrift der Wirtschaftsgruppe Zuckerindustrie (Verein der deutschen Zucker-Industrie). *Formerly* Zeitschrift des Vereins der Deutschen Zucker-Industrie. Berlin.
- Zuckerrübenbau.** *Formerly* Zeitschrift für Zuckerrübenbau.

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